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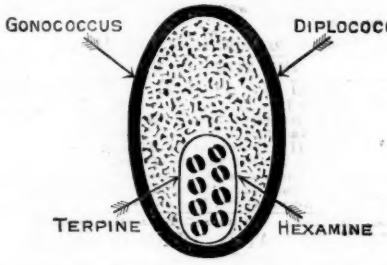


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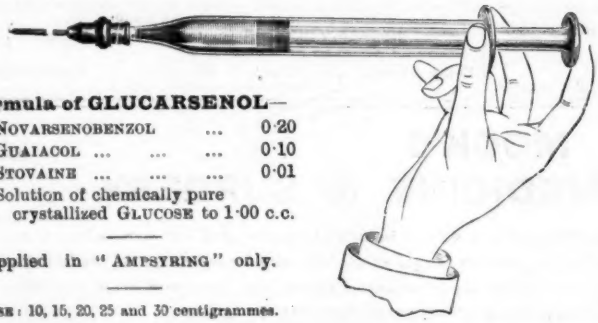

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# A Lecture
ON
# BODY AND MIND.

*Delivered at the Thirty-first Congress of the Royal Sanitary Institute held at Birmingham on July 19th to 24th, 1920,*

BY SIR FREDERICK W. MOTT, K.B.E., F.R.S., M.D., F.R.C.P. LOND.

MR. PRESIDENT AND GENTLEMEN,—When I was asked by the Royal Sanitary Institute to give the lecture at the meeting to be held in July in Birmingham I considered what subject I could deal with to the best advantage from my own personal experience—as physician for 30 years to a large London hospital, as pathologist to the London County Council asylums for 25 years, and as chief neurologist to the Neurological Clearing Hospital, London, during the whole of the war and since. "Body and Mind" was the subject I selected, for this reason—that no real progress can be made in the study of the mind, in health and disease, if either the mental or the bodily part of man's nature is studied apart, one to the exclusion of the other, for they are indissolubly united.

The experience of the war and its aftermath has taught us one great lesson. That there is a large number of men and women who, owing to an inherent or acquired neuropathic temperament, are unable to make or sustain the necessary mental adjustments to enable them to be of military or civil worth in the military or civil occupations in which they have been or are at present engaged.

There is an After-Care Association which does admirable work in looking after the feeble-minded and those who have been discharged from asylums, but what I think is of more importance is a Before-Care Association, to help the great army of inefficients suffering with no obvious bodily disease or defect; such are individuals suffering with neurasthenia, anxiety neurosis, psychasthenia, mild cases of mental depression and mania, hysteria, hypochondriasis, and epilepsy; also particularly those who are still suffering from the effects of shell shock, hysteria, and other war neuroses.

The functional paralyses, tics, tremors, blindness, deafness, mutism, and other functional disabilities occasioned by the stress of war and emotional shock in neurotic or neuropathic individuals were, from a psychological point of view, biological protective reactions of the emotion of fear by unconscious suggestion, affording a mode of escape from an intolerable situation. The intolerable situation I refer to is trench warfare. Since these functional disabilities were produced by suggestion, they could be, and were, cured by contra-suggestion and persuasion. I have been astonished at the ignorance of many of my professional brethren regarding the diagnosis and treatment of these functional cases.

At the Maudsley Hospital we have cured hundreds of soldiers and pensioners in a few minutes, a few hours, or a few days, who had been in hospitals and convalescent homes months or years, and who, owing to ignorance of diagnosis, had been treated for organic disease by massage and electricity, carried out frequently by sympathetic ladies on the "poor dear" principle, under the direction of medical practitioners unacquainted with neurological and psychological medicine.

Again, surgeons have treated numbers of functional orthopædic disabilities by the application of expensive and elaborate apparatus, often of the most ingenious nature. The result of their ingenuity, however, was only to suggest to the mind of the patient organic disease, and firmly instal the idea of the existence of a permanent disability and pension for life. The existence and cure of this class of functional case is certainly as old as Christianity, and probably much older. Functional neuroses and psychoses exist among savages and primitive peoples in all parts of the world, frequently taking on a local colour.



### NO NEW NERVOUS DISEASE IN WAR NEUROSES.

The war has produced no new nervous disease; it is the same hysteria and neurasthenia which neurologists knew before the war, and which were curable by the same methods. A fact brought home to all those who have had the care of war psycho-neuroses is that the signs and symptoms of hysteria and neurasthenia of men who have been to the front and have been invalided home (except those in which there has been definite evidence of cerebral or spinal commotion or concussion, burial, or gassing) in no way differ essentially from the signs and symptoms of hysteria and neurasthenia of soldiers who have never been out of England. In support of this statement I may mention that I have seen both hysteria and neurasthenia arise from the fear of conscription, or, having been conscripted, an hysterical crisis, contracture, or paralysis has occurred when it became known that the conscript would be in a draft for general service abroad.

Again, inoculation has been followed by hysterical paralysis. I may mention one case which was recently sent to me. He was inoculated in March, 1915, and a quarter of an hour after he lost the use of his legs. He was sent to various hospitals and brine baths. He was then boarded out of the army and received a pension of £2 12s. per week for himself, his wife, and family. He was sent to me by the Chelsea Pensions Board, arriving with crutches and a contracted knee. He was induced by contra-suggestion and persuasion to walk in half an hour, and in a week was discharged cured.

I have observed that hysterical manifestations, especially mutism, paralysis, and contractures, are much more frequently met with in the men than in the officers. The latter more often suffer with an anxiety neurosis.

### SEVERE SHOCK MAY INDUCE HYSTERICAL MANIFESTATIONS IN A NEUROPOTENTIALLY SOUND INDIVIDUAL.

The great importance of the inborn or acquired neuropathic tendency in the production of the symptoms and signs of hysteria and neurasthenia cannot be over-emphasised. At the same time it must be admitted that shock, and by this I mean not only commotional but emotional shock, due to terrifying or horrifying conditions of war, may have induced hysterical manifestations in a neuropotentially sound individual, in fact, in a soldier who, by his record, had shown that he was neither of a timid disposition nor had any neuropathic tendency.

Automatism and somnambulism, like the hypnotic state, is caused by a dissociation of the field of consciousness from perpetual stimuli, and is regarded as a characteristic symptom of hysteria. Yet cerebral commotion, caused by the bursting of a large shell, may, as the following case shows, bring about in a neuropotentially sound individual a condition of automatism:—

*Battle Hypnosis.*

"A captain was admitted under my care, and gave the following history: His company had dug themselves in, in a wood; he went out into the road to see if a convoy was coming, when a large shell burst near him. It was about 2 o'clock in the morning, and quite dark; about 4.30 A.M. it was quite light, and he found himself being helped off a horse by two women, who came out of a farmhouse. He had no recollection of anything that happened between the bursting of the shell and this incident."

The anxiety neuroses and psychasthenia with obsessions which have been and still are affecting so many people, both in military and civil life, are neuropathic functional disorders which cannot thus be rapidly cured by suggestion and persuasion. The sufferers with these functional disorders are frequently quick-brained, intellectual men and women in all grades of society, and these are suitable subjects for psychotherapy. The doctor who has a knowledge of psychological medicine and makes it his business to study the desires and motives which determine conduct, and who is able to establish that sympathetic relation with his patient whereby he gains their confidence, is able to uproot from the mind an anxiety causing a mental conflict, for which the patient is continually, but unavailingly, striving to make adjustments. The

continuous mental conflict from which the patient affected by an anxiety neurosis suffers goes on during sleep, exhausting his nervous energy and leaving him unrefreshed, depressed, and despondent on awaking. This mental conflict which the experiences of the war and the dreams of soldiers of their terrible experiences have brought home to us in a vivid manner reacts unfavourably upon all the bodily functions; thus a vicious circle is established in which the *joie de vivre* can only be restored by removing the cause of the anxiety and improving the bodily health. Now that the terrors of the war and their effects on the mind are passing away we have the aftermath of the war and the persistence of a widespread anxiety neurosis occasioned by a contemplative fear for the future of self, of wife and family, in a large number of officers and men with an inadequate or deferred pension and no employment. Many of these officers and men joined up early in the war, before entering an occupation or completing their training in it. No wonder, then, that a widespread spirit of discontent exists among ex-Service men, in spite of the fact that rather belated endeavours in mental hygiene are being made by the Government to establish Training Centres for education, re-education, and social rehabilitation. The nation is only beginning to realise that we can never go back to the pre-war conditions.

### OBJECTIVE PSYCHOLOGY.

Before, however, I proceed to discuss some of the practical problems of mental hygiene, I will briefly consider the modern trend of objective psychology.

The furniture of the mind is the memory of the experiences of our life and of the bonds that unite them; there can be no mind without memory, and no memory without body. The furniture of the mind of primitive man consists largely of the memory of experiences connected with the primal instinctive activities of nutrition, by capture of food, of self-preservation and avoidance of pain, of reproduction, and of the instinct of the herd. The civilised man is able not only to store up and utilise his own experiences, but by means of language and abstract thought, to associate these experiences with those of innumerable other human beings, who live and have lived, and thereby to reason on a much higher plane, and utilise his psychic energy in a multitude of refined ways for the ultimate ends of the primal instincts.

The Freudian school of psychologists assert that all psychic energy has its roots in sexual instinct, and they maintain that the sexual life of the individual begins its development at birth or even before birth. Dr. W. McDougall, in the last edition of his "Social Psychology," has added a chapter on the "Sexual Instinct," and he now recognises that sexual experience and conduct afford the most obvious support of the biological theory. He remarks that the energy of the sex impulse, if it is not expended wholly in its own channels of expression, may reinforce intellectual activities, and thus function in situations that make no direct appeal to the instinct. Such indirect utilisation of this primal instinct as a great source of psychic energy, available for other than purely sexual activities, is the process which Freud terms sublimation.

McDougall recognises the general truth of this Freudian doctrine, without, however, committal to the acceptance of all, or, indeed, any, of the other doctrines of the "sex impulse" of Freud, and I am in agreement with him that the theory of the sex instinct serving as the great source of psychic energy is a fundamental principle of biological psychology. The psychic energy derived from the sex instinct is the *élan vitale* which bursts forth in youth, and is so well and poetically described by Shakespeare in *Romeo and Juliet* in the lines:—

> "My bosom's lord sits lightly in his throne;
> And all this day, an unaccustomed spirit lifts me
> Above the ground with cheerful thoughts."

Every intelligent human being is continuously engaged in the practical study of psychology, although he may be as unconscious of the fact, and, moreover, as surprised when he is told, as Molière's "*Bourgeois Gentilhomme*" was, when he discovered that he had been talking prose all his life. For do we not all judge by analogy the feelings and motives of others by observing their conduct, their facial expression and gestures, a universal language of the emotions which is often a truer indication of the passions and motives passing in the minds of our fellow-men than is revealed by speech, which often, as Talleyrand said, was given to man to hide his thoughts.

All the desires and impulses which move human beings to action have their source of psychic energy in the four primal animal instincts of nutrition or capture of food, self-preservation, the sexual instinct, and the herd instinct. All feelings, thought, and action, whether individual or collective, have their source in these essential springs, out of which flow the mental streams and rivers of individuals and nations.

In the higher animals there are few purely instinctive modes of behaviour unmodified by intelligence and by habits acquired under the guidance of intelligence and imitation. Man, owing to the great development of his brain, his erect posture, strength, and symmetry of the body, together with the hand, as instrument and instructor of the mind, has been able to make an infinite variety of sensory-motor adjustments and reactions to environment for the conservation of the individual and the preservation of the species. By the acquirement of refined means of inter-communication of his thoughts and feelings, firstly by a language of emotions and later by an articulate language of intelligence and abstract thought, he has, within comparatively recent times, built up a social heritage. But it is doubtful whether this has been associated with any structural change or increased development of the brain; although without this social heritage he could never have attained the power he has obtained of controlling the forces of Nature.

Compared with countless ages man has existed on the earth feeling, thinking, and acting in response to the gratification of the desires of these primal instincts, the oldest known civilisation is but as yesterday to many years.

### EVOLUTION OF THE SEXUAL INSTINCT.

When we realise that the intellect of man in the process of evolution has within comparatively recent times been superimposed upon this strong animal instinct, the gratification of which is attended with intense pleasure and its repression with mental pain, and, further, when it is considered that social progress and conditions of modern civilisation tend more and more to frustrate the end of this strong instinct which Nature designed for the preservation of the species, a disharmony arises which not only endangers the happiness and contentment of mind of numbers of civilised human beings, but also threatens the race with decay. Seeing that culture and civilisation cannot suppress this vital force of the sex instinct, its control has been, is, and must ever be, a difficult problem for the race; and as McDougall says, the difficulty increases rather than diminishes with every forward step of civilisation and every increase of far-sighted intelligence over the immediate promptings of human nature.

The herd instinct in man is intimately associated with the sex instinct in this problem, for the bond of union of the herd is a willingness on the part of each member to sacrifice individual interest and life in the interests of the herd; self-preservation thus becomes secondary to preservation of the species. This is well exemplified in the social instincts of bees and ants and gregarious animals.

Primitive man and still more civilised man, have evolved social usages and customs connected with the sex instinct which have become traditions in the tribe or race, allegiance to which serves as a further bond of union, and every individual who desires to be esteemed and his conduct approved, must conform to these traditional customs and usages and the penalty of thinking rationally, of thinking differently, and of thinking and acting independently is to court disapproval, disfavour, or of being thought not respectable. Yet, as Maudsley says, "How inestimable, then, the service rendered to mankind by the few who can think, and, thinking, do differently from the herd." A truth which Prince Henry appeared to appreciate when he sarcastically

complimented Poins: "Thou art a blessed fellow to think as every man thinks; never a man's thought in the world keeps the roadway better than thine." (2nd Part *King Henry IV.*, Act 2, Sc. 2.)

But what is the solution of this sex problem? Early marriage is what Nature intended, and this is poetically expressed in the philosophy of Shakespeare when, in the Sonnets, he is advising a young nobleman to marry and propagate thus:—

"Upon the earth's increase why shouldst thou feed
Unless the earth with thy increase be fed?
By law of Nature thou art bound to breed
That thine may live when thou thyself art dead.
And so in spite of death thou dost survive
In that thy likeness still is left alive."

Religions and traditions from time immemorial have centred around the sex instinct; this is strikingly illustrated in the worship of the Virgin and Child, symbolic of chastity and the tender emotions.

All the higher, as well as the baser passions and sentiments have their source in the sex instinct. Painting, sculpture, music, romance, literature, and the drama owe their inspiration and fervour to the sexual passion; yet social traditions and customs of the herd have, in the past, conspired to throw a veil over the tree of life, the openly expressed knowledge of which has been regarded as the forbidden fruit. Social conditions tend to repress the supreme end of this instinct, especially in women. When this happens the psychic energy of the instinct is not suppressed; it may be repressed and cause a silent current of sexual desire and passion which, although not manifest to the external world, nevertheless occupies a large place in the conscious and subconscious self, causing mental suffering, with its special emotional tone which finds outward expression in æsthetic forms or religious observances.

The aim and object of a civilisation should be, then, to encourage early marriage of people of civic worth by provision of houses, of a wage or income sufficient to maintain a wife and family, and by the removal of all restrictions to suitable marriages and the upbringing of children. It is certain that overcrowded dwellings and domestic discomfort lie at the root of many social evils. With the present conditions of our social system, however, marriage is possible only for a certain proportion of the population, but the sex instinct cannot be suppressed. In some the psychic energy may be diverted into other channels—e.g., the young may be encouraged to utilise the energy in sport, work, and intellectual occupations, but in spite of such diversion, moral teaching, and fear of consequences, large numbers of both sexes cannot control the impulse and do not remain chaste, consequently promiscuous intercourse and prostitution, with all its attendant evils, continue. It is of no use hiding this fact; the war has clearly shown the truth of this statement. Venereal disease was, and is, still raging in our midst. A hopeful change, however, came over the public, in a great measure due to the fatal emergencies of the war, backed by a strong expression of opinion from our Colonies, that prophylactic measures had to be taken to prevent this scourge in our midst becoming worse.

### *The "Hidden Plague."*

Seven years ago venereal disease could not be discussed in the public press, in spite of the fact that our hospitals, infirmaries, asylums, and institutions for the deaf, the blind, the paralysed, the imbeciles, and the idiot contained a large proportion of inmates suffering with incapacitating or fatal disease directly or indirectly due to venereal infection. And in spite of the fact that large numbers of innocent women and children were the sufferers, and in spite of the knowledge that a large proportion of the abortions, miscarriages, children born dead, as well as sterility in women, was the result of infection.. The public had not yet learned to follow Dr. Johnson's adjuration to clear the mind of cant. Then came the International Medical Congress in London, and the discovery of a new method of treatment of what had been euphemistically called in the press the "hidden plague." Fortunately to be hidden no longer, for a Royal Commission was appointed, of which I was a member, and it was proved that the registration of causes of death, which had been relied upon by politicians, instead of revealing the fatal effects of venereal disease, obscured them. The evidence showed that 1 in 10 of the adult male population had been infected with syphilis, and a far larger percentage with gonorrhœa. The evidence proved that there was not an organ or tissue of the body which was not liable to be diseased on account of it, and that its most incapacitating and fatal effects fell upon the most vital structures—viz., the heart, the blood-vessels, the spinal cord, and the brain. Statistics proved that 10 per cent. of persons infected, in spite of treatment, had subsequently died of softening of the brain or other nervous disease, after having been paralysed or demented for years.

It was hoped that the recommendation of the Commission, supported later and energetically carried out by the National Council for Combating Venereal Disease, would, by the establishment of early ablution treatment centres throughout the kingdom, be able to deal effectively with venereal infection and prevent the spread of the disease. Unfortunately, many borough councils and county councils, including the London County Council, do not regard these early ablution treatment centres as practical, or at any rate refuse to adopt this means of combating venereal disease. Numbers of eminent medical men, some of whom were originally members of the National Council, realising the impracticability of early treatment centres, desire to see the same method of immediate self-disinfection adopted for the civil male population, as was successfully practised in the army by Sir Archdall Reid at Portsmouth. The treatment he employed was a simple disinfectant—1 part in 1000 of permanganate of potash.

Public opinion has changed, for a whole column of a recent issue of the *Times* was given to the subject "Venereal Disease, Self-Disinfection Problem. Deputation to the Minister of Health."

The President of the Society for the Prevention of Venereal Disease, Lord Willoughby de Broke, read the following resolution of the Society:—

That inasmuch as the Ministry of Health has failed, and public bodies (including the London County Council) have declined, to provide the means of delayed disinfection against venereal disease at ablution centres, this meeting calls upon the Ministry of Health and upon local authorities to instruct all qualified chemists to sell such means of immediate self-disinfection against venereal disease as may be approved from time to time by the Ministry of Health or by medical officers of health.

Whilst giving a sympathetic hearing to the deputation, the Minister expressed the opinion that before he adopted any of the suggestions submitted to him he had to be satisfied that any change he made was in the right direction. The department was anxiously watching the experiments that were being conducted, and he would seriously consider the proposals put forward for self-disinfection.

It is argued that there is no evidence of a recent increase of venereal disease, but that larger numbers of people attend the treatment centres; and in support of this fact it is claimed that general paralysis of the insane and locomotor ataxy, both of which are, in all cases, the direct result of the syphilitic organism invading the nervous system, have not shown an increase; but this argument is entirely fallacious, for the average time after infection, when these diseases manifest themselves, is ten years. There is strong evidence to show that the reason why these late fatal syphilitic diseases of the nervous system are so common among civilised people is that the organism has become modified owing to the widespread use of mercury in treatment, and seeks the nervous system, where it is protected from the effects of the drug. These diseases, general paralysis and locomotor ataxy, are seldom met with in countries where syphilis has been recently introduced.

The reasons advanced why this scientific knowledge of early disinfection should not be employed is the fear that it will increase immorality. Of course, every right-minded man would say that either chastity or marriage is the only safeguard, but I have given strong

reasons why, in the present social conditions of our people, we can hope for neither of these moral conditions becoming universal. Why should we wait till the syphilitic organism has entered the body before attempting to destroy it? Every delay diminishes the hope of eradicating the disease and preventing its spread, and we have to consider the innocent women and children, the dead and the unborn hundreds of thousands of babies. If in other diseases we, as doctors, make every endeavour to destroy the germ before it can colonise in the body and cause a constitutional disease, why not in this disease? I appeal, therefore, to this Sanitary Congress to support the propaganda of the Society for the Prevention of Venereal Disease for the following reasons:—

(1) If the experience of the war has shown that it is impossible for numbers of men to be sexually moral, is it not desirable that they should be made to feel the responsibility of contracting the disease and transmitting it to innocent people? The only practical way in which I can see this can be done is by instruction in immediate self-disinfection.

(2) Early treatment centres are not likely, for obvious reasons, to be used by numbers of men after exposure to infection, and again, there will often be fatal delay before the treatment centres can be reached.

(3) The cost of self-disinfection is borne by the individual, whereas the taxpayer has to pay for treatment centres.

I have seen, in the London asylums, thousands of men and women die from general paralysis of the insane. For 20 years I have endeavoured to make the profession and the public realise that if there were no syphilis there would be no general paralysis or locomotor ataxy. To show the effects of syphilis in the production of fatal and incapacitating nervous disease and paralysis I will cite an experience of only last week. I went to a London infirmary to give a clinical lecture to my class on nervous diseases then being treated in the institution. There were five cases among the women suffering with severe organic nervous disease, and four out of the five were due to syphilis. The frequency with which syphilis acts as a cause of fatal and of disabling organic disease is known to every hospital physician.

The destructive effects of syphilis on the brain is the best example I can offer of the effects of bodily disease upon the mind. The loss of mind is proportional to the destruction of the hemispheres of the great brain, which is the anatomical substratum of consciousness and memory, and in the last stages of which the sufferer with this disease leads a mere vegetative existence.

### THE HERD INSTINCT AND THE SUGGESTIBILITY OF MAN.[1]

The gregarious instinct is to follow a leader. Sometimes this is advantageous, sometimes disadvantageous, both in peace and war. The dancing mania of the Middle Ages was a striking example of the effects of suggestion; we see it every day in crowds that will collect at the most trivial incident; indeed, if a person stood in the street and gazed up at the sky, although nothing was to be seen, his action would soon be imitated by numbers of people. In war, this suggestibility may be advantageous or the reverse. A British general is said to have remarked that 10 per cent. of a regiment would fall down or run away, 10 per cent. would follow you to the gates of hell, and the remainder would follow either. It is obvious, therefore, that the men with nervous or timid temperaments are a positive danger, and it was for this reason doubtless, that some of these men, in the earlier years of the war, were tried by court-martial and shot for cowardice. Conscription of large numbers of neuropotentially unfit men, who never could make soldiers, was subsequently found to be a mistake. Morever, it was found to be a mistake to send officers and men back to the front who had been sent home suffering with shell shock, neurasthenia, or hysteria. Nervous or mental inferiority was not considered sufficiently as a cause of rejection for general service, and the nation is paying a heavy price in the matter of pensions in consequence thereof. Does not this clearly show that some psychological training of medical men is necessary, especially when we remember that one-third of the unwounded in 1917, discharged as unfit for service, were men suffering with war neuroses and psychoses? It also shows what experienced neurologists know, that a large proportion of the civil population are potential neuropaths or psychopaths, and that this branch of medicine should be taught more efficiently.

I am glad to see that the Royal Sanitary Institute has recognised the importance of psychiatry in sanitary science by initiating a discussion on psychiatric clinics. We have learnt that a mentally sound individual does not become insane by the stress of war; nor does stress produce mental deficiency. The war has taught us that the neuroses, insanity, epilepsy, and mental deficiency are inborn, and the stress and strain of war have merely revealed or accelerated their onset. A long experience as pathologist to the London asylums and a study by a card system of 4000 near relatives, who have been or who are still inmates, showed conclusively the importance of the hereditary factor. The experience of the war has supported this conclusion. A striking illustration is shown in the case of 10,000 Serbian prisoners who were subjected to famine, stress, and severe bodily diseases—e.g., typhus, typhoid, and tuberculosis—yet only five suffered with insanity. But not only are the psychoses (that is, insanity), but the neuroses are markedly hereditary, and as Dr. John Macphersen, the Scottish Commissioner in Lunacy, has pointed out, "the hereditary disease is transformable, neuroses appearing in the antecedents and collaterals of the subjects of the psychoses, and vice versa, from which we may imply a common hereditary basis." They constitute genetic variations from the normal, in respect of a hyper-excitability of the sensori-motor elements, owing to a narrow margin of the highest control of the brain, which renders the subjects susceptible to mental suggestion or to physical or mental impressions which do not similarly affect normally stable individuals. The symptoms usually commence to manifest themselves in early life, childhood, or adolescence. "The neuroses have no geographical or racial limit, but affect individuals of all human races, and, so far as that is possible, of several of the higher animal series."

### ALCOHOL AND ITS INFLUENCE ON BODY AND MIND.

Alcohol, like syphilis, is a race poison, and affects every organ and tissue of the body. It is rapidly absorbed into the blood, and it passes from the blood into the fluid that surrounds and bathes the central nervous system; its first and immediate effect is as a narcotic upon the higher controlling centres of the brain; consequently, owing to its widespread abuse, it is the most important cause of disorders of conduct and crimes of violence, as prison statistics show. It is not so potent a cause of insanity as asylum statistics would seem to indicate. Why, then, is it assumed to be such a cause of increase of insanity? Firstly, because the data upon which the statistics are made are unreliable. Secondly, because potential lunatics, epileptics, and the feeble-minded have only a narrow margin of highest control, and a relatively small quantity is sufficient to make them antisocial, and thus reveal the unsound mind, so that they become certifiable. In support of this conclusion I would draw your attention to the following facts: I compared the results of 2000 post-mortem examinations, which I made at Claybury Asylum, with 2000 post mortems in Charing Cross and St. George's Hospitals, and whereas cirrhosis of the liver with dropsy very seldom occurred among the insane, it was a very frequent cause of death of the sane in hospitals. The inference is that the potential lunatic can seldom drink large quantities of alcohol for any length of time without his unsound mind becoming revealed. There is no doubt that persons who have suffered with head injury or brain disease are intolerant of alcohol. Alcohol and syphilis work together in undermining the constitution. Alcohol plays an important part in the spread of venereal disease. Many

[1] Those who are interested in this subject should read the philosophical work of Mr. Wilfrid Trotter, "The Herd Instinct in Peace and War."

a good man's life has been wrecked by loss of self-control on one occasion only—when he has indulged in excess of alcohol.

Control of the liquor traffic, especially of the sale of spirits, is necessary in the public interest, but I do not favour total prohibition. The sale of alcoholic beverages in the form of light beers and wines seems to be a reasonable mode of dealing with the question, and not likely to cause the widespread discontent that total prohibition would.

### MENTAL HYGIENE AND THE TEACHING OF PSYCHOLOGICAL MEDICINE.

In America, for the past three years, there has been a very active development in the study of mental hygiene, and a quarterly journal dealing with the subject in all its aspects has been published by a National Committee of Mental Hygiene of which Mr. Clifford Beere is the secretary. He wrote a remarkable book entitled "A Mind that Found Itself." In this he gives his experiences of the treatment of his mind when it was unsound, and points out how illogical it had been. The objects of this national committee are to help both the physician and the patient; also to befriend the patient's relatives, to whom, when burdened with an actual or impending affliction, it would become an unfailing source of information, advice, or comfort. In a word, it would be a friend to humanity, and upon these lines this Committee of Mental Hygiene and its centres of activity have been doing most valuable work in the United States. It is such a "Before-Care Association" that we want in this country.

The war has shown the great need of systematic teaching of psychological medicine as a part of the medical curriculum. In 1907 (Vol. III., *Archives of Neurology and Psychiatry*) I strongly advocated this teaching for post-graduates, and suggested that a diploma of psychological medicine should be instituted, for I felt sure that it would raise the tone of medical men employed in the care of the insane and lead to diagnosis and better treatment of mental disease in the early curable stage. I also advocated the establishment of a psychiatrical clinic in London, where the incipient and borderland cases could be seen and treated.

In a recent number of THE LANCET,[1] in an annotation on the Genesis of the Maudsley Hospital, the statement I made is quoted in full, and the article goes on to say that there is good reason to believe that it was this desire on my part to see a hospital in London for the study and treatment of neuroses and insanity in the early stages which induced Dr. Henry Maudsley to give £30,000 to the L.C.C. to build such a hospital. Unfortunately, this great physician, philosopher, and philanthropist died a few years ago, before the hospital, which is named after him, was fulfilling the objects which he contemplated. However, it did most valuable service during and after the war, and I hope that soon the Ministry of Pensions, who are at present using it, will be able to hand it over for civil use. I was convinced in 1907 that the institution of a diploma in psychological medicine would prove as valuable to that branch of medicine as the diploma of public health had been, and I called upon the President of the Royal College of Physicians to try and induce the Royal Colleges to give such a diploma, but I was quite unsuccessful. Just prior to the war the Cambridge University led the way and instituted such a diploma, and now many universities and the Royal Colleges give diplomas of psychological medicine. What is now required is the systematic teaching of the subject. For the past three months a course of psychological medicine, which will occupy six months, has been in operation at the Maudsley Hospital, under the direction of the L.C.C. The course has been designed for either the University of Cambridge diploma or for that of the Royal Colleges. I am pleased to say that a class of 36 post-graduates have attended.

### THE NEGLECT OF MEDICAL PSYCHOLOGY.

Sir George Newman, in his recent admirable report on Medical Education, states: It is deplorable that the English student of medicine should have no opportunity of learning modern methods of psychiatry or of diagnosing incipient and undeveloped cases of mental disease. And yet, in 1913, Parliament imposed statutory duties upon the medical practitioner, among them being: "He must be competent to diagnose all forms of mental disease" (Mental Deficiency Act, 1913). The public might ask, why did not the authorities previously insist upon proper training in this important branch of medical education, involving the liberty of the subject? The effects of this neglect of training in this important branch of medicine was shown in conscripting for the war. In the report of the Ministry of National Service physical fitness and unfitness only are considered.

It is difficult to understand, in the face of the report of Sir George Newman and war experience, that in the report of the Consultative Council on Medical and Allied Services, the scheme referring to the equipment of the Secondary Health Centres, Provision 57, does not include any department of neurology and psychiatry, although other and less important special departments of medicine are provided thus: skin, ear and throat, eyes, genito-urinary, dental, and industrial hygiene. Possibly, having regard to the fact that Dr. Addison, in a preface to my work on "Shell Shock and War Neuroses," fully recognises the importance of the subjects, the Ministry of Health may have in view some special scheme of dealing with neurology and psychiatry.

The importance of psychotherapy has been realised in the university of this great city, for courses of lectures have been given on this important subject by two leading authorities, Dr. Bernard Hart and Dr. W. McDougall. Academic psychology is not of practical importance to the medical man, although the knowledge of it is helpful; it is the study of conduct and its disorders considered biologically, as set forth by the late Dr. Mercier, which should engage his attention, and in conclusion I would remind my audience of the words of Francis Bacon, in his "De Augmentis," when he pleads for a study of mind and character: "That so we may have an accurate dissection of men's minds and characters, and the secret dispositions of particular men may be revealed, and that from a knowledge thereof better rules may be made for the treatment of the mind."

[1] THE LANCET, March 13th, 1920, p. 618.

## SOME ASPECTS OF FUNCTIONAL NERVOUS DISEASES.

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THE complicated, contradictory, and fluid views currently expressed as to functional nervous diseases, affections bordering upon definite mental disorder and established insanity, must prove exceedingly bewildering, not only to the practitioner of general medicine, but also to those who particularly devote themselves to neurology and psychiatry. In the study of the ætiology of such affections it was not so long since that endless time and tireless energy were devoted to the search for structural alterations of tissues examined post mortem and to the examination of the cytology and chemical composition of such fluids as are available for examination during life. Even now laborious works are being compiled and published full of descriptions of minute changes in the cells and in the chemical composition of fluids derived from cases of nervous and mental disease, but more striking, at least in bulk and novelty of content, is the gigantic output of literature of the last 20 years bearing upon psychology, normal and morbid, which contains little or no reference to anatomical findings and indeed not infrequently explicitly ignores them. The mind has come to be regarded as almost independent of the body, while the investigation of its processes is carried on solely in the psychological field. Many symptoms which not long ago were held to be due to faulty biochemical reactions are now ascribed to the ill-adaptation of mental processes.

Anyone who has watched phases of the development of medical science and art will have been struck by the similarity of the genesis of fashions in therapy. A new idea is mooted and is almost at once carried to logical extremes by those who are of the imaginative and sanguine type of mind which especially loves "to tell or to hear some new thing." For instance, I remember when some years ago I set forth in a paper that a certain micro-organism had been discovered in a case of a certain disease, that I received the day after publication a wire asking for a curative serum for use in its treatment. On the other hand, we find a type of mind common and probably more widely diffused, though as a rule less voluble, which strongly and almost angrily resents the upset and readjustment of ideas involved in novelty. There is a third type, of which there are but few examples, in which criticism follows hard upon discovery, and in which ardour for the hypothetical is moderated by patience and cooled by experience. The protagonists clash in that which is obviously a welcome conflict and the din is deafening, while the small voice of genuine inquiry is only heard when they are exhausted by their vociferations or have found some new thing to interest them. In the field of functional nervous disorder we are still in the midst of the battle, but it may be worth while to attempt very briefly to set forth the position to which we have been carried.

*Disease With or Without Structural Alteration.*

By organic disease we mean that some alteration of structure has occurred, and that this alteration has been associated with a disturbance or cessation of function. There are also disorders in which structural alteration is not at all obvious, but of which physical agents are generally recognised as the cause, for instance, the affections which result from intoxication either by bacterial products or by poisons of other origin, from the effects of climate, or from those numerous circumstances which result in symptoms of exhaustion. In these affections in order to produce a cure it is generally enough to remove the causative agent. There remain, however, disorders of the various systems of the body in which structural alterations have not been decisively demonstrated, and about which the opinion is general that there may be none to demonstrate. In these disorders ætiological factors are obscure and do not appear to include physical agents among them, while physical agents used therapeutically appear to be of little or no value. The literature of the last century is strewn with the endeavours which were continuously being made to discover among physical agents the causes of functional nervous disease, and innumerable physical agents, including drugs, hydrotherapy, electrotherapy, rest, isolation, diet, climate, gymnastics, and metals were used in their treatment. So many and divergent have been these methods that some suspicion has been aroused as to the value of any of them. Confusion has also arisen from the fact that an agent apparently of value in some cases and in some hands has produced little or bad or no effect in other cases of a seemingly identical character. The problems which have thus arisen have of necessity turned men's minds in another direction, and it has been sought to discover whether mental processes might not, at least in some cases, eventuate in physical disorder, and whether many somatic symptoms might not be in fact the expression of disordered mental operations. These surmises were fortified by a consideration of the many therapeutic systems mostly extra-scientific and practised by those who were not trained as professional physicians. Miracles of undoubted authenticity and genuineness have been recorded from the earliest times, and though sometimes associated with physical agents have not been associated causally with them and have appeared for the most part to have been produced by the effect of the expression of the performer's mentality upon his patient. During the early part of the nineteenth century, owing to the work and reputation of Mesmer, the idea of the mind cure became extremely prominent, and various synonyms for mesmerism, such as hypnotism and suggestion, have marked attempts to raise the empiricism of Mesmer's procedures to a more scientific level. In the latter part of the last century arose the colossal movement known as Christian Science, the basic idea of which is the supremacy of the mind in its own and in the physical fields. In this case also the endeavour to raise empiricism to a scientific level has been an important stimulus of psychological research in the causation and cure of the somatic effects of psychic disturbance, and in the essential character of the disturbances themselves. Whether the causation of any affection be regarded as of physical or psychic origin, general principles of treatment still hold good—that is to say, the discovery, where possible, of the exciting cause and its removal, the neutralisation of its ill-effects, or where this is not possible, their palliation.

The therapeutic principle of palliation of symptoms of psychic origin is perhaps best exemplified by the method derived from the Stoics of inducing in the patient's mind a contempt of his bodily suffering, and a reliance on such fortitude as he can muster. The neutralisation of symptoms is exemplified by the method of suggestion under hypnosis in which injunction not to have certain symptoms sometimes results in their disappearance. The most truly radical mode of treatment, however, lies in the attempt to discover the mental irritant and to remove it. These modes of treatment have each of them ardent exponents, and any one of them would appear from current literature to be capable of the cure of all functional nervous diseases. In practice, however, these methods are discovered to be inextricably confused, to overlap and not by any means always to eventuate in the hoped-for results, while the time and labour involved both for patient and physician not infrequently render them impracticable.

*Physico-genetic and Psycho-genetic Causes.*

The causes of functional nervous disease may be divided into those which are physico-genetic and those which are psycho-genetic. Among the physico-genetic causes are the toxins of the bacterial infections and of intestinal stasis, the poisons manufactured in the body by faulty metabolism, as in gout and diabetes, poisons taken into the body, for instance, alcohol and morphia, and the excessive or defective amount of the secretion of the endocrine glands or its defective quality.

The psycho-genetic origin of certain functional nervous and mental disorders has been long and universally recognised. Before the physico-genetic causes were in the last century especially stressed, delirium, mania, melancholia, and delusions had been regarded sometimes as due to direct possession by the devil, and at others as the punishment of sin or the manifestation of a guilty conscience. The pendulum has again swung in this direction, though nomenclature has altered. Possession by the devil is not held to be a causative factor of functional nervous disease, but mental conflicts as the result of the opposition, on the one hand, of instinct, and on the other of education in its broadest sense is, in some quarters, held to be the basic and often the sole cause. It is a platitude to say that certain events make a more powerful impression than others, and that certain ages are more impressionable than others. Some events make such an impression that they are associated with the phenomena of physical "shock." Persons who have been shocked in this way often show symptoms which before the war were grouped under the heading of traumatic neurasthenia, and which during the war were given the euphemistic name of "shell shock." Other events do not produce shock but changes of a more subtle character, which may eventuate in states of mind which are not compatible with the instinctive and acquired mentality of the individual. Such states of mind may betray themselves in various ways as symptoms. In some such cases the origin of the symptoms may not be known by the patient, or a supposed origin may not be the true one. As a rough analogy derived from the somatic field may be mentioned the common experience that the dyspeptic often attributes his symptoms to heart disease, and is proportionately depressed by them, and that when their true origin is explained to him he sees how baseless and

unreasonable is the anxiety from which he had been suffering. In addition to the dramatic causation of cases of traumatic neurasthenia and shell shock, there are in all lives potentialities of worry—that is, of mental discomfort, distress, or even pain. Worry may be associated with the home, with the health and character and conduct of relations and friends, with their attitude towards the patient or with his towards them; with the patient's professional career, with the making of name and position; with society, its congeniality or uncongeniality, or with the level which it has assigned to the patient or with the level in it to which the patient aspires; with religion, dissatisfaction with a faith and insufficient faith or scepticism, or the incompatibility of past or present conduct with some ideal standard; with politics and the incompatibility of things as they exist with the imagination of what they ought to be. Such factors as these are often very well known to the patient as sources of worry and as producing disharmony and conflict in his mind. Palliation, neutralisation, or complete abolition may be obtained by amended attitudes of mind and conduct. In some cases, however, the symptoms which take the patient to the physician are not recognised as the result of the worry, or, maybe, the mental disharmony or distress or conflict is not patent and explicit in his mind, and he is only brought to recognise it when the incongruities of his mentality are brought to light and become plain to him. Such an absence of clear recognition on the patient's part of his own mental disturbance may be of the nature of a defence against psychic discomfort or pain, and, in fact, due to the putting aside or repression of that of which the presence is not desired in consciousness. The process of repression appears to imply (1) an unpleasantness or a something to be repressed; (2) a tendency to forget the unpleasant, not necessarily consciously acknowledged, and which would, when it acts very early in life, seemingly amount to an instinctive process; (3) a power to put this tendency into operation and to make it effective; and lastly (4) that which may be called a mechanism of repression, the nature of which is not at present completely understood. That repression is not always absolutely complete is obvious, for if it were no past unpleasantness, whether remembered or not, would cause either mental distress or those symptoms which are alleged to be the expressions of unconscious conflict.

*Mental Degeneration, General or Patchy.*

In organic mental affections—e.g., general paralysis of the insane, chronic alcoholism, or arteriopathic dementia—there occurs a general all-round mental degeneration. In functional affections the symptoms are not those of an all-round degeneration, but are of a patchy distribution; for instance, there may be imperative ideas, obsessions, delusions, amnesia, morbid anxiety, phobia, anæsthesiæ, palsies, contractures, or such abnormal movements as tremors and tics. It would hardly seem worth while to explore the psychic ætiology of the symptoms of general paralysis, while it is as obvious that the exploration of the psychic factors of the ætiology of such symptoms as those just named must be very important. It should, however, always be remembered that various conditions of lowered physical health make symptoms of psychic origin more pronounced, and in many cases appear to be their direct excitant. This is also especially important in treatment, since the facilities at present obtaining in most neurological clinics as now conducted for prolonged mental examination are but small, and recourse has to be made to some of the crude though useful methods of physicotherapeutics. It is not proposed here to review such methods for the treatment of functional nervous disorders. Rest, isolation, electro-therapy, balneo-therapy, drugs, and careful dieting have their place as useful adjuvants of psycho-therapy in various cases, and as forming a scenic setting for its performance. With regard to modes of treatment whose object is to deal directly with morbid phenomena patently or not of purely mental origin, there are three which command the most attention—namely, suggestion, education or re-education, and analysis.

*Three Modes of Treatment:* (1) *Suggestion.*

A definition of suggestion has not been generally agreed upon. The term is used in many different senses. The primary meaning of suggestion is the putting forward of an idea with a view to its acceptance by the individual to whom it is proposed. Plainly the methods of proposition may be very varied, but perhaps it is correct to say that in medicine the term means the authoritative proposition of an idea for acceptance without question. Suggestions may be made when the patient is in a condition of artificial sleep or in the waking state. During hypnosis the patient's conscious mind is at rest and suggestions are made to the part of the mind which is not conscious. On the other hand, in the waking state suggestions are made to a part of the mind in which, as it is hoped, criticism is not aroused and in which there is a mental attitude of passive acceptance and obedience. Such appeals to the unconscious or to the unreflecting mind may undoubtedly, at least in some cases, mitigate or abolish symptoms. But it is obvious that in such a method the origin of the symptoms is not explored and their cause persists. There is probably a state of what may be called normal suggestibility, which is the usual one for most individuals, and it is to this normal state that political orators and newspaper editorials, directed towards the influencing of our "psychology," appeal. Most of our "opinions" are probably the result of various influences which have impinged upon us at impressionable periods of life and which are, in fact, founded upon but slight if any real ratiocination. There is also undoubtedly a condition of hyper-suggestibility in which some persons are prone to accept absurd propositions or those which are novel or extraordinary. When sick, or when they think they are sick, such persons try cure after cure simply because suggestion is made to them by advertisement or by enthusiastic friends that the various cures are infallible. It should here be remembered that an alternative name for hysteria is pithiatism, a word coined to express the opinion that hysteria is due to hyper-suggestibility. On the other hand, it is undoubtedly the case that some persons are hypo-suggestible. A few individuals are not prepared to accept propositions unless they are proven, an ideal state rarely, if ever, attained; while others have not reached this ostensibly high intellectual level, but are simply unreceptive of ideas to which they have not been accustomed or which they do not understand. Under treatment by suggestion may, perhaps, be placed a method which has come to be known as that of "shock tactics," in which a ferocious appearance, a hectoring manner, and a faradic current are combined to assure the patient that he has nothing really the matter with him. Suggestion under hypnosis is also used to induce the expression of a mass of pent-up emotion, the result of some direful experience. The memory of the experience has been repressed, with resulting symptoms of functional nervous disease. The patient is told under hypnosis again to live through the experience. He does so, and in so doing gives vent to the emotional expression proper to the experience. Such purgation of his unconscious mind may result in the disappearance of symptoms.

(2) *Education.*

In the therapeutic applications of education or re-education, in those cases where education has been defective or erroneous, appeal is not made to a mind which is not at the time conscious or under the spell of authority, habit, and custom, but is made to the developed and organised power of ratiocination. The appeal is generally by way of explanation and elucidation of symptoms, and an endeavour is made to arouse and develop firstly, a reasonable outlook, and secondly, the self-control which constitutes the normal repressing force. A method by which repression is effected and the power to repress doubtless exist and have been evolved because they have their value.

Just as the physical eye has, during evolution, learnt to see that which is useful for the purposes of the organism to which it belongs, and is neither microscopic nor telescopic in its powers, so has the psychic eye learnt to make its selections, while the rest is neglected as valueless or repressed for its unpleasantness. It is

not, then, unreasonable to suppose that there is in the individual a proper amount of the power of repression, and that in some this power is weak and results in hypo-repression, while in others it is strong and results in normal repression, or perhaps at times in over or hyper-repression. In hypo-repression that which it has been sought to repress may manifest itself in ways which are recognised by the patient as due to his defective power of repression or in ways which are not so recognised, and are expressed as symptoms of functional nervous disease. On the other hand, in hyper-repression in persons of considerable power of ratiocination and self-control, there may, for a time at least, be periods during which symptoms disappear or are tolerable, but there are likely to be other periods when their powers are weakened, perhaps owing to physical illness or to exhaustion, and when that which is repressed may again emerge and indicate its presence in morbid anxiety, in various symptoms of functional nervous disease, or in the tremendous spiritual conflicts of which accounts are frequent in "Lives of Saints." In this mode of treatment, as in treatment by suggestion, the origin of symptoms has not been investigated.

(3) *Analysis.*

In one aspect mental analysis is but an elaborated and systematised method of investigating the causes of functional nervous disease, but by its radical methods it also claims to remove the causes of disease and in this way especially to be of therapeutic value. The treatment of symptoms is held, as in general medicine, to be of less value than the discovery and eradication of the causes of disease. These causes are often of the nature of repressions, which occur in some cases so early that, as it has been observed, it is difficult to determine whether the process is an instinctive one or a result of early education. Repression certainly does occur later in life, when ideas which have been inculcated clash with instincts, or when one set of inculcated ideas clashes with another. In the latter case, at any rate, it is doubtful if it is necessary to carry an examination as far as infancy to discover the repressed idea. But in other cases it would appear that normal psychic growth has not been steadily progressive, and that in some respects it has become stationary, so that a conflict arises between this fixed set of ideas and other sets of ideas which have continued their normal progression.

Some of these fixations and repressions hinge upon the sexual impulse, but it is doubtful if in all cases it is necessary to insist upon such a connexion, at least if the word sexual is to be used in its customary sense. Recently the word has been given an extension which includes the "impulse towards life," relations between parents and children, and ordinary social relations between persons of the same or opposite sex. In the investigation of these relations it is somewhat difficult to avoid the feeling that too great a scope is occasionally allowed to the vagaries of the imagination, for they are extremely difficult to control in scientific investigation. In some cases, interpretations, seemingly wild, are confirmed, but occasionally also such interpretations appear to take the nature of a rather dangerous process of suggestion, the process being recognised neither by the patient nor the physician, and an imaginative interpretation is adopted by both and set forth as the cause of the disorder. Further, it is quite obvious to those having experience of cases which have been systematically investigated that the discovery ensuing from the investigation does not always eventuate in cure, or even alleviation. Failure to alleviate may be ascribed by the physician to his defective knowledge or faulty art, but when he comes across unrelieved cases which have been treated by the able, experienced, and learned, a similar doubt as to the correct nature of the technique cannot be raised, and he is obliged reluctantly to admit that this method, along with others at present in use, has its limitations.

From the practical point of view the time which a faithful analysis takes, owing to the numerous cross currents, false scents, and mare's-nests, often makes it impracticable as a form of treatment. Whatever the theory as to ætiology adopted, and whatever the mode of treatment practised, it remains true that many, and perhaps the majority, of those suffering from functional nervous disorders get better, and, indeed, happily often lose their symptoms entirely. Many cases have also recovered without any pretence of treatment, or their cure has occurred during a treatment which has not perceptibly been causally connected with it. The repressive forces have perhaps become stronger, or the expanding or centrifugal force of that which is repressed has perhaps become weaker. Inquiry into the nature and strength of such forces is very much needed.

The fruits of experience and thought tend, above all things, to show that psychology is still in its infancy and that morbid psychology is younger still, that we cannot do much therapeutically, but that we can do something, and that we certainly cannot afford in examining a case to leave any stone unturned or in treatment to leave any method untried, whether it be derived from the physical or psychic worlds. To make too hard-and-fast a division between the psychic and the physical is to go unwarrantably beyond the data of experience. As physicians we have to deal with the mind and with the body, and where the sphere of the one begins and the other ends we certainly do not know, nor to what extent, for good or evil, they influence each other.

## A CONTRIBUTION TO THE DIAGNOSIS OF ACTIVE PULMONARY TUBERCULOSIS.

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AT the recent Tuberculosis Conference in Leeds it was admitted by the pioneer of auto-inoculation therapy in England, Dr. M. Paterson, that "borderline" cases have been met with occasionally in his own practice. The excellent results at Frimley, however, can only be ascribed to the consummate care with which the patients were selected for graduated exercise, for certain it is that success depends very largely on prolonged rest, graduated if need be, coupled with close clinical observations, in all cases exhibiting signs of active disease in the chest.

This borderline type of patient may be described as follows:—

The temperature is normal when the patient is at rest in bed, and very frequently also on rising to have light exercise in the ward. The pulse-rate fluctuates between 80 and 90 per minute, and may not be more than 95 after dressing. Cough and sputum may or may not be present, and the physical signs in the chest may vary from an apical lesion of small dimensions to extensive disease involving both sides of the chest. The sputum, if present, may show no acid-fast bacilli, or these may be present in small or large numbers. If it be washed and plated, however, it will almost invariably be found to contain secondary invaders in varying numbers and kinds.

Pneumococci and streptococci are common, but staphylococci, *Micrococcus catarrhalis*, and other organisms are frequently observed. The patient himself has a feeling of comparative well-being, and may complain of nothing except the ennui of restricted freedom. He is apparently fit and well enough to take a step forward in treatment. The first step may be a successful one, but more frequently it is followed by a rise in temperature, accompanied by the symptoms of uncontrolled auto-inoculation. Much, if not most, of the damage caused by indiscriminate tuberculin therapy has been in this type of case.

*Leucocyte Counts giving Quantitative and Qualitative Cell Picture.*

With a view to establishing an objective proof of latent activity in this "borderland" type the author has carried out a large number of blood examinations, the details of which have been published elsewhere. I have found this helpful in guiding to a definite conclusion, one way or another, as to the suitability of a particular case for treatment by graduated rest and exercise.

The method is as follows:—

Total white cell counts are made at intervals during the day; blood examinations during the night are not necessary.

For practical purposes counts every three hours are sufficient. A note should be made of the temperature and pulse-rate on each occasion a total white cell count is made. The process should be repeated the following day if possible, and again at later dates until a definite conclusion is arrived at. Blood films are also taken at weekly intervals, the time, date, temperature, and pulse-rate being noted at the same time. A differential white cell count should be made, and finally an Arneth count of the nuclei of the polymorphonuclear leucocytes. A white cell picture is thus obtained. It is quantitative as well as qualitative.

From an analysis of 67 cases in which 150 differential counts of the white cells, together with Arneth counts, were made, and of 30 cases in which 250 total counts were estimated, the following conclusions were reached:—

1. If consecutive daily leucocyte counts are made, a variation in total numbers of white cells is found in all active cases of pulmonary tuberculosis—a variation in excess of that occurring normally in health. (See Leucocyte record A.)

2. Physical signs in the chest may give little or no help in determining the activity of a lesion. For instance, a cavity in the lung may be followed by pathological "repair" and clinical quiescence, and in such a case the total leucocyte count may be small, and the Arneth count but slightly altered. (See B.) Conversely, there may be a definite "leucocyte swing" and a marked "deviation to the left" in cases showing no other objective sign of active disease.

3. The total leucocyte count bears a definite relationship to the acuteness of the lesion in the chest, and the acuteness of the lesion has, in turn, a more or less intimate connexion with the presence of organisms other than the tubercle bacillus.

4. The Arneth "deviation to the left" (a phrase synonymous with an increase in cells of Class I. and II.—i.e., those with one or two nuclear segments) is established in all cases of active disease. The more severe the infection the greater is the deviation to the left. (See C.)

5. An approximation of the *quantitative and qualitative* blood picture to the normal is a favourable sign and indicates quiescence.

### *Significance of Total White Cell Count and its Fluctuations.*

Examinations of the sputum and cultures from the lung tissue in all cases of advanced tuberculosis prove that organisms other than the tubercle bacillus play an important part in the bacteriology of the disease. (Ortner,[1] Petroff,[2] Ravenel and Irwin,[3] and others.) We know that, unlike the pneumococcus,[4] the toxins of the tubercle bacillus do not stimulate the production of polymorphonuclear cells. It is the rule to find leucopenia with relative lymphocytosis in early and also in advanced but quiescent cases of phthisis. Further clinical proof of the fact that the tubercle toxins do not encourage leucocytosis may be cited from the blood investigations in cases of miliary tuberculosis, where massive doses of tubercle toxin are constantly in the circulation. (See D, from Cabot.) All authorities agree that leucopenia is the rule in these cases. From two cases seen I am in a position to verify this statement. Treadgold's animal experiments are significant.[5]

It would appear, therefore, that the leucocytosis found in cases of active pulmonary tuberculosis is an indication of the "septic" element in the pathology of the disease, and it may be deduced that these "secondary" invaders give rise to hæmatological changes in the absence of other clinical signs of active disease in the lung.

To explain the low counts which interpolate themselves with such regularity and frequency in certain cases of pulmonary tuberculosis is difficult. They are not due to rest, nor can bone-marrow exhaustion explain them. Bone-marrow exhaustion, however, is not to be diagnosed from estimations of the total leucocyte count alone. The qualitative picture must also be considered. An apparently satisfactory quantitative reaction may be in reality a bad qualitative one, indicating failure of the bone-marrow. A third possible explanation of the "leucocyte swing" is that it is due to periodical intermissions from the diseased focus of substances acting on the polymorphonuclear cells by negative chemiotaxis.[6 7] The balance between the various toxins can never be equal, and in this way the leucocyte swing is maintained, being elevated when the "pyogenic" toxins are in excess, and being low when the blood stream is surcharged with tubercle toxin.

### *Significance of "Deviation to the Left" (Arneth).*

The precise significance of the "deviation to the left" in the presence of an infection is problematical. This was dealt with in a note on "The Neutrophile Index" in THE LANCET of April 24th, 1920. I regard the excess of cells with one or two-lobed nuclei as due to an increased and excessive demand on the activities of the bone marrow. It is unfair to assume that the bone marrow can keep up a satisfactory response in quantity and quality over a long period of time, as in mixed pulmonary infection. Quality suffers before quantity, if we are to take the Arneth deviation to the left as a criterion of cellular efficiency; and from the large mass of work which has been done on the Arneth count, we are entitled to believe that the cells in Classes I. and II. are indicative of an ebbing immunity when they are in excess.

In the presence of a large number of "single-lobed" polymorphs such as is found in acute infection it is matter for surprise that myelocytes are not found much more frequently. Cells described as myelocytes have been found by Wack and Kast,[8] working independently. Personally I have never been able to identify true myelocytes in any of the films I have examined, not even in cases where the index has been over 95. It may be said, I think, that the deviation to the left is an expression of qualitative bone-marrow exhaustion, as distinct from quantitative. In miliary tuberculosis it has been shown that a leucocytosis is not a feature of the disease, and yet the Arneth count exhibits a deviation to the left as in most intoxications. (See E.) So also in intestinal diseases in children, it has been pointed out by Esser[9] that a similar phenomenon may be observed. I know of no observations which have been made on the neutrophile index in patients suffering from syphilis, whooping-cough, or typhoid fever, but until further observations are forthcoming in these diseases it can be suggested tentatively that aggressins, or the toxins associated with organisms which do not cause leucoplastic reaction, act on the bone marrow by inhibiting the development of the young polymorphic cell.

### *Some Illustrative Leucocyte Records.*

A. On admission patient was pale and very much emaciated. At first the temperature was very unsteady, running between 98° and 100° F. The pulse-rate did not come below 90 per minute, despite evening temperature on Jan. 24th being normal. Several examinations of the sputum were made; on each occasion tubercle bacilli

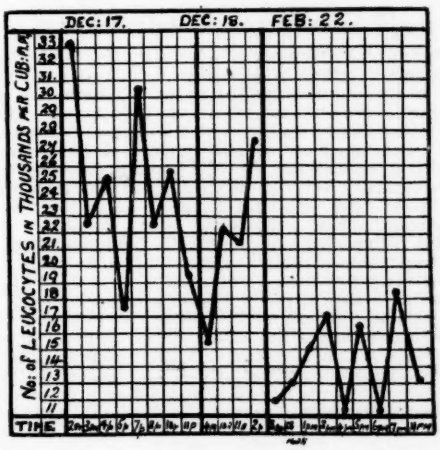



FIG. 1.—Leucocyte counts were made on Dec. 17th at 2, 3, 4, 5, 7, 8, 10, and 11 P.M.; on Dec. 18th at 4, 10, 11 A.M. and 2 P.M.; on Feb. 22nd at 8 A.M., noon, 1, 2, 4, 5, 6, 7, and 11 P.M.

were found. The physical signs in the chest showed impairment of resonance over right upper lobe with harsh breath sounds and numerous crepitations over the same area. On Feb. 29th the case closed dramatically. Hæmoptysis was so profuse that patient died five minutes after onset of bleeding. (Fig. 1.)

B. Patient was extremely emaciated. T. 99·4°–100·4° F. The sputum contained tubercle bacilli in large numbers—50 to 60 to the field.

Both sides of the chest, back and front, were dull to percussion On auscultation, the respiratory murmur was very harsh over the entire chest, especially on left side, where whispering pectoriloquy could be heard. There were other definite signs of cavity formation over the upper lobe on left side. Numerous moist sounds accompanied both inspiration and expiration in both upper lobes. Arneth index, 71·5. (Fig. 2.)

C. Male, aged 24. Onset three months previous to date of first blood examination. Family history bad. General condition poor. Temperature 99° to 102° F. Pulse 100 to 110 per minute. Signs of acute disease in left lung and in upper lobe of right lung. Sputum contained tubercle bacilli, streptococci, staphylococci, and numerous diplococci. Patient died Dec. 24th.

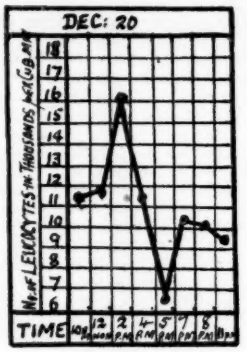



FIG. 2.—Leucocyte counts were made at 10 A.M., noon, 2, 4, 5, 7, 8, and 11 P.M.

| Class ... | I. | II. | III. | IV. | V. | Index. | Date. |
|---|---|---|---|---|---|---|---|
| | 42 ... | 46 ... | 12 ... | 0 ... | 0 ... | 94·0 ... | Aug. 28th. |
| | 47 ... | 45 ... | 8 ... | 0 ... | 0 ... | 96·0 ... | Sept. 19th. |
| | 48 ... | 45 ... | 7 ... | 0 ... | 0 ... | 96·5 ... | Oct. 8th. |

D. (*From Cabot.*)—*Miliary Tuberculosis.*

| Date. | Time. | Leucocytes per c.mm. | Date. | Time. | Leucocytes per c.mm. |
|---|---|---|---|---|---|
| Dec. 22nd ... | 10 A.M. ... | 5625 | Dec. 24th | 8 A.M. ... | 3750 |
| | Noon. ... | 4725 | | 10.30 A.M. ... | 3750 |
| | 3 P.M. ... | 5000 | | 2 P.M. ... | 2500 |
| | 5 P.M. ... | 3125 | | 4 P.M. ... | 2500 |

E. *Arneth Count from a Case of Miliary Tuberculosis.*

| Class ... | I. | II. | III. | IV. | V. | Index. |
|---|---|---|---|---|---|---|
| | 36 ..... | 56 ..... | 8 ..... | 0 ..... | 0 ..... | 96 |

*References.*—1. Ortner: THE LANCET, clxxxii., 876, quoted by Inman. 2. Petroff: L'Infection Mixte dans la Tuberculose Chirurgicale, Annales de l'Institut Pasteur, 1904, xviii., 502. 3. Ravenel and Irwin: Studies in Mixed Infection in Tuberculosis, Trans. Nat. Assoc. for Study and Prevention of Tuberculosis, Lancaster, Pa., U.S.A., New Era Printing Company, 1905. 4. Gulland and Goodall: The Blood: A Guide to its Examination and to the Diagnosis and Treatment of its Diseases, W. Green and Son, 1914, p. 315. 5. H. A. Treadgold: THE LANCET, 1920, i., 699. 6. Bail: Berlin. klin. Woch., 1905, 15, and other papers. 7. Sauerbeck: Zeit. f. Hyg., lvi., 1907. 8. P. Wack: Deutsches Archiv für klinische Medicin, 1914, cxv., 596. 9. Esser: München. med. Wochenschr., 1906, liii., 1651.

## BILHARZIA TREATED WITH TARTAR EMETIC.

BY F. G. CAWSTON, M.D. CANTAB.

THE study of a number of bilharzia patients who have undergone a course of treatment by intravenous injections of tartar emetic would appear to show that the best results are obtained where the injections are given on alternate days for most of the time, and the treatment is continued for a complete month. It has been my practice to commence with gr. ¼, and in only one case of idiosyncrasy have I noticed any severe effect from this initial dose. On that occasion the patient of 15 experienced great abdominal pain, vomiting, and collapse about four hours after the administration of the drug; this condition lasted till midnight. The second day I give half a grain, and on the third three-quarters. I then give, on alternate days, from one to one-and-a-half grains, and continue the injections for three to five weeks, according to the disappearance of ova from the urine. If the solution is absolutely fresh and the injections are given regularly, a total of from 12 to 15 gr. would seem to be sufficient to effect a permanent cure in the majority of cases.

Toxic effects are less common in patients who are given a solution of the drug which has not been freshly prepared, and it is reasonable to suppose that the drug loses much of its effectiveness if the solution is allowed to stand for even a short while after it has been made and boiled. There is also the danger of fungus-growth in solutions of tartar emetic. This presents the appearance of small flakes of cotton-wool, and is noticeable after the solution has been standing for only a few hours. The risk of injecting even small quantities of this into the general circulation can be avoided by dissolving the powdered tartar emetic by boiling in distilled water and injecting it before it has become cold. I find a solution of gr. 4 in 16 c.cm. of distilled water is a suitable preparation to give in all cases that have come under my care. This renders an ordinary hypodermic syringe a convenient one to use for the smaller doses.

There is an accumulative effect of tartar emetic which was well shown in a patient of mine whose skin under a wrist-watch was markedly blackened after receiving a total of 12 gr. of the drug. By giving the injections on alternate days we make good use of this accumulative action and make smaller doses more effective. As a rule, daily injections should be avoided, for the patient should be given time to recover from all toxic effects of the drug before receiving further injections. Toxic effects are undoubtedly lessened where the injections are given shortly after a light breakfast, instead of later on in the day. This point has been emphasised by Dr. J. B. Christopherson,[1] and is borne out by my own experience.

In the series of cases given in Table I. a comparatively small total dosage has proved sufficient, for in every instance the ova degenerated gradually until they disappeared completely, and the urine has remained free from blood for periods of from two to six months.

TABLE I.

| — | Age. | Duration of disease. | Urine: + few ova + + many ,, | Grs. of tartar emetic injected in No. of days. | Result in No. of days after injection. |
|---|---|---|---|---|---|
| C.C. | 20 | 1 week. | + | 5¾ (15) | No ova (145) |
| C. W. | 12 | 1½ yrs. | + + | 13½ (34) | ,, ,, (36) |
| H.R. | 9 | 2 ,, | + + | 6½ (35) | ,, ,, (120) |
| W.M. | 29 | 7 ,, | + + | 12⅝ (25) | ,, ,, (47) |
| O.S. | 19 | 7 ,, | + | 14 (30) | ,, ,, (86) |
| A.S. | 39 | 25 ,, | + | 11 (20) | ,, ,, (127) |
| H.B. | 12 | 4 ,, | + + | 8½ (34) | ,, ,, (198) |
| J.B. | 10 | 4 ,, | + + | 8½ (35) | ,, ,, (198) |
| D.C. | 15 | 5 ,, | + + | 12¾ (27) | ,, ,, (82) |
| L.D. | 21 | 1 ,, | + | 9½ (21) | ,, ,, (41) |
| J.W. | 16 | 3 ,, | + | 11¼ (27) | ,, ,, (169) (185) |
| S.C.* | 28 | 15 ,, | + | 10½ (21) | Negative blood test (28) No ova (37) 1 dead ovum (110) |
| C.R. | 13 | 2 ,, | + + | 9½ (35) | |

* With positive blood test.

In the series of cases given in Table II. where the attendance of the patients was irregular or the course of injections stopped early for one cause or another, degenerated ova were found in the specimens of urine examined some weeks after the injections ceased.

TABLE II.

| — | Age. | Duration of disease in years. | Ova in urine. | Grs. of tartar emetic injected in No. of days. | Remarks. |
|---|---|---|---|---|---|
| E. T. | 16 | 5½ | + + | 13½ (25) | Hæmaturia after 108 days. (Ova all apparently dead.) |
| H. W. | 24 | 5½ | + + | 12½ (24) | Two ova, one alive after 92 days. |
| J. C. | 21 | 1½ | + + | 10½ (21) | Hæmaturia after 177 days. |
| F. G. | 16 | 4 | + + | 11 (38)* | Many ova after 76 days. (Degenerated.) |
| B. T. | 17 | 7 | + + | 12½ (25)† | Living ova after 62 days. |
| F. McN. | 15 | 5 | + | 12¼ (32)‡ | Living ova after 73 days. |

* Missed three days running. † Missed four days. ‡ Missed four days twice.

Two apparently dead ova were found in another patient's urine 277 days after treatment had ceased. He had received a total of 12¾ gr. in 40 days, besides some intramuscular injections of collosol antimonium. As he had suffered from hæmaturia daily for the previous 18 years and had seen no suggestion of it since his treatment, it is reasonable to suppose that he is cured of the disease. Another, whose treatment was discontinued at the end of only a fortnight on account of a severe "cold" following an injection in January last, reported a recurrence of his symptoms three months later. He had received a total of under 9 gr. of tartar emetic, and a full course of 15 gr. was given to make his cure complete.

Durban.

[1] Journal of Trop. Med. and Hyg., July 15th, 1919.

# THE BLOOD AND URINE IN PANCREATIC DISEASE.

BY P. J. CAMMIDGE, M.D. LOND.,
J. A. CAIRNS FORSYTH, F.R.C.S. ENG.,
AND
H. A. H. HOWARD, B.SC. LOND.

## I.

IT was shown by one of us in 1904[1] that when the urine of a patient suffering from an inflammatory affection of the pancreas is boiled with hydrochloric acid, the excess of acid neutralised, and a phenylhydrazin test carried out with the resulting liquid, a much larger yield of osazone crystals is obtained than with a normal urine treated in a similar manner. Later the test was modified, and its delicacy increased, by removing glycuronic acid from the boiled urine with subacetate of lead before heating with phenylhydrazin.[2] Subsequent experiments with dogs, conducted in conjunction with Mr. H. C. G. Semon, confirmed the results of clinical experience, and showed that an increased formation of osazone crystals after hydrolysis of the urine occurs when the functional activity of the pancreas is interfered with by operation.[3] An investigation of the crystals carried out at the same time proved that they had the characters of a pentosazone. In order to eliminate the personal factor as much as possible from the test and secure figures by which one case might be compared with another, and with the normal, a quantitative method was devised and described in 1913 under the name of the "Iodine Coefficient of the Urine."[4] This method had the advantage of being applicable to diabetic as well as to sugar-free urines, so that it was possible to investigate the functional activity of the pancreas in cases of glycosuria. A long series of observations showed that the iodine coefficient of healthy urine is nil, but that in cases of pancreatic disease it varies from 12 to 20 per cent., with a total of 100–200 units for the 24 hours. Meanwhile the nature of the pentose formed on hydrolysing pancreatic urines with an acid, and the composition of the mother substance from which it was derived, were being investigated, and in 1914 it was proved that the pentose has the characters of xylose and that the mother substance corresponds in chemical properties and composition to a dextrin.[5] Further research was interrupted by the war, but during the past year it has been resumed with results which we propose to discuss in this and subsequent papers. We shall there describe the investigations we have made into the origin of the urinary dextrin, and consider a series of new observations we were led to carry out on normal carbohydrate metabolism, and the changes occurring in diabetes mellitus, which we believe throw considerable light on the ætiology of that condition and furnish a basis for a more scientific treatment than has been possible hitherto.

### *The "Difference Value" of the Urine in Pancreatic Disease.*

Before dealing with these subjects it will be convenient to refer to a comparatively simple process for estimating the dextrin content of the urine in cases of suspected pancreatic disease, which we have employed for some years in place of the so-called pancreatic reaction. It takes much less time to carry out than the iodine coefficient and, although not quite as accurate, gives comparable results, 3 units by the new method corresponding to 1 unit of the iodine coefficient; thus in cases of pancreatitis readings of 20 to 60 units per cent., with a total of 100 to 500 units for the 24 hours, are usually obtained. This method cannot be applied satisfactorily to urines containing more than a trace of sugar, and for such the more laborious iodine coefficient must be employed. A specimen of the urine is boiled with hydrochloric acid and, after the excess of acid has been neutralised, it is made faintly acid and liberated glycuronic acid removed by treatment with subacetate of lead. The fluid is then made up to a definite volume with water and filtered. The reducing power of an aliquot part of the clear filtrate is now determined by some delicate and accurate process, such as that described by one of us in 1917.[6] The reducing power of the filtrate from a sample of the unboiled urine, made faintly acid if necessary, treated with subacetate of lead, and diluted to a like degree, is also ascertained by the same method. The difference between the results, which we term the "difference value" of the urine, is a measure of the dextrin present. The details of the process are as follows:—

20 c.cm. of the urine are placed in a small flask and 2 c.cm. of hydrochloric acid (sp. gr. 1·165) are added. The neck of the flask is closed with a small funnel to act as a condenser, and the contents are boiled on a sand-bath for exactly 10 minutes. The excess of acid is then neutralised by adding 5 c.cm. of a saturated solution of sodium carbonate, slowly and with constant shaking, until frothing ceases. A dilute solution of acetic acid is now added drop by drop until there is no more effervescence and the fluid is faintly acid in reaction. The contents of the flask are transferred to a 50 c.cm. volumetric flask (A) and the flask in which the boiling has been carried out is washed out with a little water, the washings being added to the contents of the volumetric flask. The fluid is now well shaken with about 5 g. of subacetate of lead, made up to 50 c.cm. with water, mixed, and filtered. A control is prepared by mixing in a second volumetric flask (B) of the same capacity 20 c.cm. of unboiled urine, made faintly acid if necessary with a few drops of dilute acetic acid and about 5 g. of subacetate of lead. After being thoroughly shaken this is diluted to 50 c.cm. with water, mixed, and filtered. The reducing power of the hydrolysed (A) and the unhydrolysed (B) urine may be compared as follows: 3 c.cm. of a modified Benedict solution[7] and 1 c.cm. of a saturated solution of sodium carbonate are placed in each of two small flasks, provided with funnels in their necks to act as condensers, brought to the boil on a wire gauze and boiled for a few seconds to expel dissolved oxygen. Exactly 5 c.cm. of the filtrate from the flask A is added to one, and the same amount of the filtrate from flask B to the other. The boiling is then continued for exactly three minutes. At the end of that time 3 c.cm. of hydrochloric acid (sp. gr. 1·165) are cautiously run into each flask from a pipette, and the contents of the flasks are quickly poured into two larger flasks containing 100 c.cm. of previously boiled and cooled water, and 20 c.cm. of N/100 iodine solution, through thistle funnels drawn to jets which project below the surface of the iodine mixture. After washing out the boiling flasks with a few cubic centimetres of hot water, and adding the washings to the iodine solution, the larger flasks are thoroughly cooled and the excess of iodine in each is titrated with N/100 sodium thiosulphate solution, using a few drops of fresh starch solution as the indicator. The difference between the amounts of thiosulphate solution required to discharge the blue colour from the contents of the flasks, expressed in cubic centimetres and multiplied by 50, gives the percentage "difference value" of the urine.

### *The Difference Value of the Blood.*

In attempting to trace out the source of the urinary dextrin in diseases of the pancreas attention was first turned to the blood. As it was obviously impossible to obtain sufficient material clinically from the peripheral circulation to isolate, or directly determine, a substance like dextrin, which has no very characteristic chemical properties, and would only be present in small quantities, a procedure similar to that employed for estimating the difference value of the urine was adopted. In our earlier experiments the reducing power of a protein-free filtrate from the blood before and after hydrolysis with hydrochloric acid was estimated by the method described by one of us in THE LANCET in 1917 and 1919, but later a modification of the Folin and Wu

[1] THE LANCET, March 19th, 1904, p. 782.
[2] Brit. Med. Jour., May 19th, 1906.
[3] Proc. Roy. Soc. B., vol. lxxxi., 1909, p. 372; Proc. Roy. Soc. of Med., iii., 4, February, 1910, p. 79.
[4] Seventeenth International Congress of Medicine, London, August, 1913, Med. Sect., p. 305; and Glycosuria and Allied Conditions, Ed. Arnold, 1913, p. 275.
[5] THE LANCET, Sept. 26th, 1914, p. 791.
[6] THE LANCET, April 21st, 1917, p. 613; and May 31st, 1919, p. 939.
[7] Dissolve 100 g. of anhydrous, or 200 g. of crystallised, sodium carbonate, 200 g. of sodium citrate, and 10 g. of sodium bicarbonate in about 600 c.cm. of distilled water by the aid of heat and add to it, with constant stirring, a solution consisting of 21 g. of crystallised copper sulphate dissolved in about 150 c.cm. of water. When the mixture has cooled to the room temperature make up to 1000 c.cm. with distilled water and filter.[6]

process[8] was adopted as a routine procedure, since it effected a considerable saving of time when a large number of analyses were being made, as was necessary in this series of investigations, in the course of which we have examined some 3000 specimens of blood. Experiment showed that the results were the same with both methods within the limit of experimental error, which proved to be about 0·002 per cent. in either direction in experienced hands. We found that the smallest amount of blood with which we could work satisfactorily was 0·3 c.cm., and this is the quantity we have usually employed in our work on the human subject, obtaining it from the root of the nail after congesting the finger by swinging and constricting it with a narrow rubber band.

The required quantity of blood (0·3 c.cm.) is measured in an accurately graduated narrow pipette and delivered into 4·5 c.cm. of water contained in a test-tube of hard glass. The contents of the tube are thoroughly mixed and allowed to stand for a few minutes; then 0·6 c.cm. of sodium tungstate solution (half the strength described by Folin and Wu[9]) and the same amount of 1/3 N. sulphuric acid, measured with a clean pipette, are added and the contents of the tube well mixed. It is now heated in a bath of boiling water for a few minutes to ensure complete coagulation of the protein, cooled, and the contents filtered. Two narrow test-tubes marked with a 12·5 c.cm. mark are next taken, and into one of them is introduced exactly 2 c.cm. of the clear filtrate and into the other 1 c.cm. of a 0·01 per cent. solution of pure dextrose and 1 c.cm. of distilled water to act as a standard. To each is added 1 c.cm. of Folin and Wu's alkaline copper solution, and the tubes are heated in a boiling water-bath for exactly six minutes. At the end of that time, without cooling, 0·5 c.cm. of an acid mixture containing sodium molybdate and sodium tungstate ("phenol reagent") is added to each. The tubes are gently shaken to dissolve the precipitate, cooled in running water, and 2·5 c.cm. of a saturated solution of sodium carbonate introduced. They are then made up to the 12·5 c.cm. mark with water and allowed to stand for 5 minutes. The depth of colour of the liquid in the tubes is then compared in a colorimeter, and from the results obtained the percentage of sugar in the blood is worked out. To obtain the hydrolysis value of the protein-free blood 2 c.cm. of the original filtrate are placed in a narrow test-tube with a 12·5 c.cm. mark and mixed with 0·5 c.cm. of hydrochloric acid, 2·5 per cent. The mixture is heated in a boiling water-bath for an hour, then cooled and neutralised by adding a saturated solution of sodium carbonate until effervescence ceases and the reaction of the liquid is faintly alkaline to litmus. The fluid is then treated in exactly the same way as described above for the estimation of the simple sugar. The hydrolysis sugar value given by the last estimation, less the value for the simple sugar obtained in the first determination, represents the "difference value" of the blood.

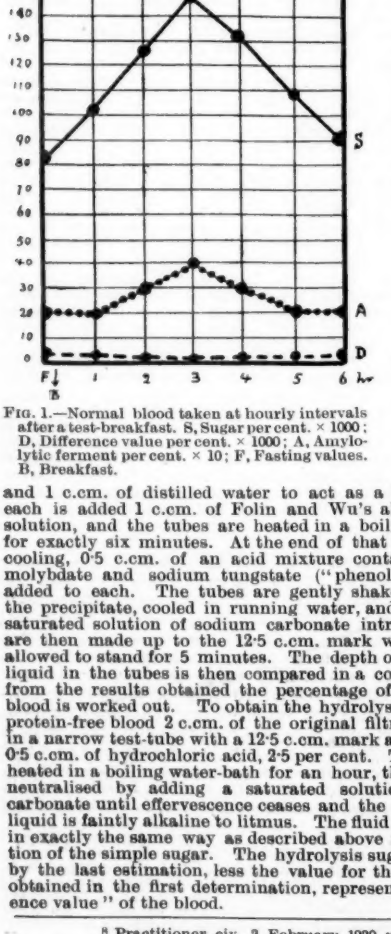



FIG. 1.—Normal blood taken at hourly intervals after a test-breakfast. S, Sugar per cent. × 1000; D, Difference value per cent. × 1000; A, Amylolytic ferment per cent. × 10; F, Fasting values. B, Breakfast.

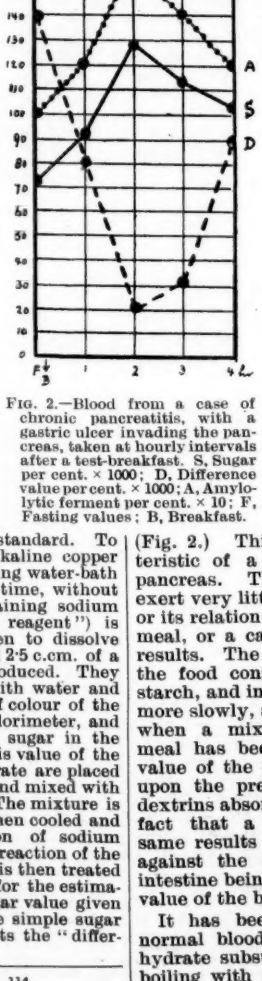



FIG. 2.—Blood from a case of chronic pancreatitis, with a gastric ulcer invading the pancreas, taken at hourly intervals after a test-breakfast. S, Sugar per cent. × 1000; D, Difference value per cent. × 1000; A, Amylolytic ferment per cent. × 10; F, Fasting values; B, Breakfast.

Observations on normal blood have shown that the difference value has a very limited range, varying from 0·002 to 0·008 per cent., and that it is not appreciably influenced by food or the nature of the diet. When examinations are made at hourly intervals after a meal a slight fall from the fasting level is usually seen at the end of the first and second hours, but by the third or fourth hour the value is again the same as when fasting or very little higher. In any case, the variation is so slight, not exceeding 0·006 per cent., as to be almost within the limit of experimental error, but the constancy of the change in a large number of observations is against this being the entire explanation. (Fig. 1.)

On carrying out a series of similar hourly examinations with blood from a case of pancreatic disease very different results are obtained. The fasting level is always considerably higher than normal, ranging from 0·050 to 0·150 per cent. in the cases coming under our observation. After a meal a rapid fall occurs for the first three hours, when, if no more food is taken, a return to the fasting level gradually follows, so that in six or seven hours the cycle is completed. On comparing the percentage of sugar in the blood with the difference value a striking relation is seen, for as the difference value falls after a meal the sugar rises the maximum of the latter corresponding to the minimum of the former, and with the succeeding rise in the difference value the percentage of sugar drops until the fasting relation is again reached. Thus, when the respective values are plotted out in a graph the sugar curve and the difference value curve move in opposite directions.

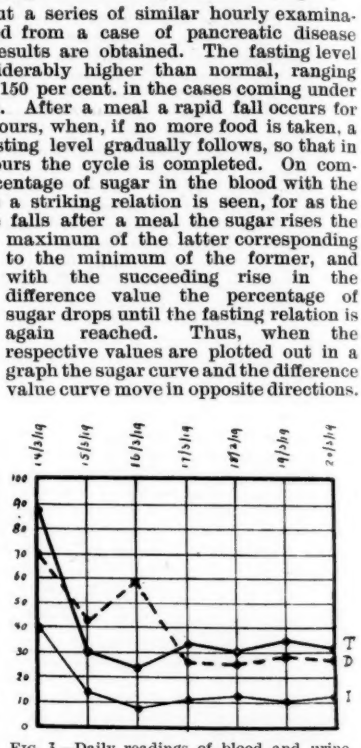



FIG. 3.—Daily readings of blood and urine from a case of chronic pancreatitis. D, Difference value of blood per cent. × 1000; I, Iodine coefficient of urine per cent. × 10; T, Total iodine coefficient of urine per 24 hours × 10.

(Fig. 2.) This relationship appears to be characteristic of a disturbance of the functions of the pancreas. The nature of the food taken seems to exert very little influence on the difference value curve or its relation to the sugar curve, a mixed diet, a meat meal, or a carbohydrate meal all giving very similar results. The only exception we have found is when the food consists entirely, or largely, of dextrinised starch, and in this case the difference value falls rather more slowly, and does not reach quite as low a level as when a mixed feed or an ordinary carbohydrate meal has been taken, suggesting that the difference value of the blood is then dependent to some extent upon the presence in the peripheral circulation of dextrins absorbed from the alimentary tract. But the fact that a protein-fat meal gives practically the same results as a meal of ordinary starchy foods is against the direct absorption of dextrins from the intestine being the usual explanation of the difference value of the blood.

It has been known for a considerable time that normal blood contains small quantities of a carbohydrate substance which yields a reducing body on boiling with a dilute acid. Freund obtained 0·82 g. of such a substance from 4 litres of ox blood, corresponding

[8] Practitioner, civ., 2, February, 1920, p. 114.
[9] Jour. Biol. Chem., xxxviii., 1, 1919, p. 81.

to 0·02 per cent. in 1892,[10] but no attempt appears to have been made, then or since, to investigate its source or significance, and with the exception of a few observations made by Lépine and Boulud in 1907,[11] the effects of disease, and particularly the influence of defective carbohydrate metabolism, on the amount present in the circulation do not seem to have been studied. Lépine and Boulud found that when the blood of a healthy dog was boiled with hydrofluoric acid its reducing power was increased by about 0·77 per cent., and that when the blood of a depancreatised animal was similarly treated a much larger increase occurred, a difference of 1·27 per cent, being met with in one instance. They accounted for the increase on hydrolysis by assuming the presence of a "sucre virtuel," but as they used whole blood for their experiments a considerable proportion of the "sucre virtuel" was no doubt reducing substances split off from the proteins of the blood by the action of the acid. Our experiments have been carried out with the protein-free filtrate, and the figures obtained represent therefore only the reducing power of the hydrolysable carbohydrate present in the peripheral circulation and are consequently much lower than those quoted by Lépine and Boulud. Our values for normal blood correspond more closely to the percentage for ox blood found by Freund than those given by the French observers, and tend to confirm the conclusion that a hydrolysable carbohydrate is a constant constituent of the blood. The fact that the percentage is enormously increased when the functional activity of the pancreas is interfered with by disease points to the amount of this substance in the circulation being controlled by some influence exerted by the gland on carbohydrate metabolism.

*The Difference Value of the Blood and the Dextrin Content of the Urine.*

In our earlier attempts to establish a relationship between the difference value of the blood and the dextrin content of the urine, as indicated by the iodine coefficient, we determined the former at a fixed time, usually three hours after breakfast, and compared it with the iodine coefficient of the collected 24 hours' urine for a number of consecutive days. Although the results when plotted out in a graph gave curves which were on the whole of a similar type (Fig. 3), the agreement was not sufficiently constant to warrant the inference that the one was related directly to the other, uninfluenced by any other factor. Later, when we had discovered the effects of the ingestion of food on the difference value of the blood, one reason for the occasional divergence of the curves became clear, and we therefore proceeded to compare the iodine values of the urine collected at hourly intervals, before and after a meal, with the difference values of samples of blood taken at similar intervals. On plotting out these results they were found to correspond very closely, suggesting that the dextrinuria of pancreatic disease is directly dependent upon the presence in the blood of a substance or substances, yielding a reducing body on hydrolysis with an acid, and therefore probably of similar composition. (Figs. 4 and 5.)

*The Amylolytic Ferment of the Blood and Urine in Pancreatic Diseases.*

Having found that the iodine coefficient of the urine is directly related to the difference value of the blood and that there is probably, therefore, an abnormal dextrin content in the blood in pancreatic disease, the next step was to determine the source of this dextrin. As dextrins are intermediate bodies formed during the conversion of starch, or glycogen, into sugar the most likely source of the dextrin was either absorbed products of digestion from the alimentary tract or converted glycogen, from the glycogen reservoirs of the body, which, owing to inefficient action of the pancreas, was not completely broken down to sugar, but passed into the blood stream at the soluble dextrin stage. As we have already seen, it is not likely that the difference value of the blood is directly dependent upon material coming from the alimentary tract, for, both normally and in pancreatic disease, its value is largely independent of the nature of the food; moreover, the fact that the difference value of the blood and the iodine coefficient of the urine are highest in the fasting state is strong evidence against such a conclusion. The glycogen stores of the body, and particularly the liver, seemed, therefore, to be the most likely source. It is well known

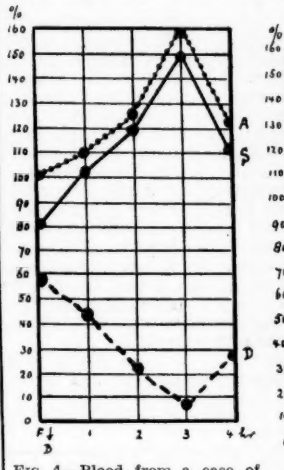



FIG. 4.—Blood from a case of cirrhosis of the pancreas, with defective fat digestion and intermittent glycosuria, taken at hourly intervals after a test-breakfast. S, Sugar per cent. × 1000; D, Difference value per cent. × 1000; A, Amylolytic ferment per cent. × 10; F, Fasting values; B, Breakfast.

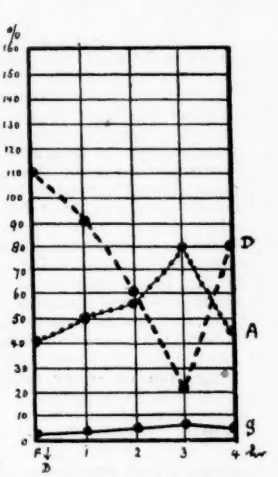



FIG. 5.—Urine from the same case as Fig. 4, taken at hourly intervals. T, Total iodine coefficient per hour × 10; A, Amylolytic ferment per hour × 10; S, Sugar per hour × 10; F, Fasting values; B, Breakfast.

that the amylolytic ferment of the urine is increased in diseases of the pancreas, and it occurred to us that if we could correlate the ferment contents of the blood and urine, with the difference value of the blood, and the iodine coefficient of the urine, it would tend to confirm the diagnostic value of the methods of examination we have described and probably give information bearing on the point in question.

For the estimation of the amylolytic ferment in the urine we employed the Wohlgemuth process, and for the blood devised the following method:—

0·2 c.cm. of blood is delivered into 2 c.cm. of water and thoroughly mixed. The protein is then precipitated by adding 0·4 c.cm. of Folin and Wu's sodium tungstate solution (half strength), and 0·4 c.cm. of N/3 sulphuric acid. The mixture is gently shaken, and without being heated is filtered. 1 c.cm. of the clear filtrate is then measured into each of two narrow test-tubes marked with a 12·5 c.cm. mark, containing 1 c.cm. of a 1/100 starch solution. One of the tubes is heated in a boiling-water bath for a few minutes to destroy the ferment and act as a control, and is then cooled. Both tubes are now placed in the incubator at 37° C., and left undisturbed for one hour. At the end of that time the sugar in each is estimated by the modified Folin and Wu process previously referred to in connexion with the determination of the difference value of the blood. The difference in the results, expressed in milligrammes of sugar, multiplied by 15, is taken as the amylolytic ferment index of the blood. If possible it is preferable to use a larger amount of blood for the estimation (e.g., 1 c.cm.), but with care satisfactory results may be obtained with the quantity mentioned. Experiment has shown that when 1 c.cm. of blood is employed the milligrammes of sugar, or when 0·2 c.cm. of blood is used the milligrammes multiplied by 15, correspond to units on the Wohlgemuth scale for urine.

With this method the amylolytic ferment of normal blood ranges between 2 and 5 units per cent., the lower figure being found in the fasting condition and the higher two or three hours after a meal. Simultaneous estimations of the amylolytic ferment and sugar in normal blood after feeding give curves of similar amplitude. (Fig. 1.) On examining the blood and urine from cases of pancreatic disease at hourly intervals it

[10] Centralbl. f. Physiol., 1892, vi., S. 345.
[11] Lépine: "Le Diabète Sucré," Paris, 1909, pp. 65, 345.

was found that the amylolytic ferment content of the two corresponded, and that when plotted out in a graph their curves moved with the percentage of sugar in the blood (Figs. 4 and 5) as in health, but at a much higher level. The difference value curve of the blood and the iodine coefficient curve of the urine, on the other hand, pursue an opposite course, the highest readings being obtained when the ferment and sugar are lowest, and vice versa. It would therefore appear that as the amylolytic ferment of the blood increases during digestion the sugar rises to a corresponding degree, but that the abnormal formation of dextrin-like bodies characteristic of the fasting state in disease of the pancreas is gradually checked. These results suggest that sugar and the substance on which the difference value of the blood depends have a common origin, and that the proportion between them varies with the amount of amylolytic ferment in the circulation. If the usually accepted view as to the cause of the rise in the blood sugar during digestion is correct, it would follow that the difference value is due to a substance of alimentary origin, a conclusion opposed to the available evidence. So far as we are aware there is no experimental proof, however, that the increase in the percentage of sugar in the blood after food has been taken is directly dependent upon material absorbed from the alimentary tract, and before proceeding further it seemed advisable to decide the question definitely if possible.

For this purpose, and also for the further investigation of other problems arising in the course of these researches, experiments upon animals under controlled conditions appeared to be necessary and were consequently undertaken.

*Summary.*

Our results up to the present point may be summarised as follows:—

1. The urine in disease of the pancreas contains an excess of dextrin, which can be measured by the iodine coefficient, and less accurately by the difference value of the urine.

2. The difference value of the blood in pancreatic disease varies directly with the iodine coefficient of the urine and is probably due to the same cause—namely, an abnormal dextrin content.

3. The difference value of the blood, and the iodine coefficient of the urine, are highest in the fasting state and gradually diminish after a meal for about three or four hours, returning to the fasting level after another three or four hours.

4. The difference value of the blood and the iodine coefficient of the urine vary inversely as the percentage of sugar in the blood after a meal.

5. The difference value of normal blood ranges from 0·002 per cent. to 0·008 per cent., and is not appreciably influenced by the ingestion of food.

6. The amylolytic ferment of the blood, and of the urine, is increased in disease of the pancreas proportional to the fasting difference value of the blood and the iodine coefficient of the urine.

7. The amylolytic ferment of the blood and urine in pancreatic disease varies directly with the percentage of sugar in the blood after a meal, and inversely as the difference value of the blood and the iodine coefficient of the urine.

## II.—OBSERVATIONS ON THE BLOOD OF DEPANCREATISED ANIMALS.

In order to obtain more conclusive evidence, and to discover, if possible, the means by which the blood and urinary changes are brought about, we arranged a series of experiments upon animals. The operative portion of this work was conducted at the Physiological Institute of University College through the kindness of Professor E. H. Starling, and we take this opportunity of expressing our indebtedness to him for permission to make use of his laboratories for the purpose.

*Normal Values.*

Some of our experiments were carried out on dogs, others on rabbits, and the first step was to establish normal values for these animals, fasting, and after different test meals had been given. We do not propose to discuss here the influence of various foods on the normal sugar content, difference value, and ferment of the blood in detail as these will be dealt with more conveniently later; it is now only necessary that we should refer to certain fundamental facts which form the basis of the experiments to be described presently.

We found that in the fasting dog the sugar content of the blood averages about 0·09 per cent. After food has been taken the percentage of sugar in the blood gradually rises for some three hours to a maximum of about 0·14 per cent., and then gradually falls to the fasting level, which is reached in five or six hours after the meal. The fasting level in the rabbit is rather more variable than in the dog, ranging from about 0·084 per cent. to 0·086 per cent. in small rabbits, up to 0·094 per cent. to 0·096 per cent. in large "Belgian hares." The effect of feeding is much the same in rabbits as in dogs, a gradual rise in the percentage of sugar in the blood taking place for about three hours, and being followed by a fall to the fasting level during the succeeding three or four hours. As a rule, the maximum figure attained is about 0·16 per cent. The difference value of the blood in both rabbits and dogs is much the same as in man, ranging from 0·002 per cent. to 0·008 per cent. As in the human subject it is not appreciably influenced by feeding. The amylolytic ferment in normal animals is lowest in the fasting condition, averaging about 2 per cent. in both dogs and rabbits. After a meal there is a gradual rise to about 4 per cent. in dogs and 5 per cent. in rabbits in three or four hours, followed by a fall to the fasting level some three or four hours later. Thus, as will be seen from the diagrams (Figs. 6 and 7), the blood sugar curve and the amylolytic ferment curve move in the

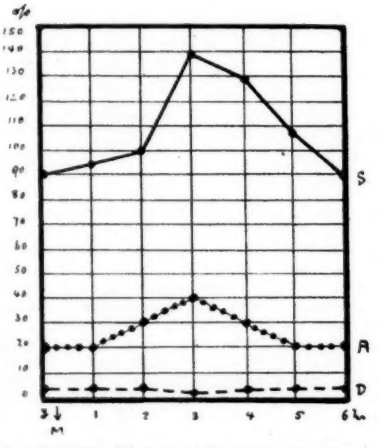



FIG. 6.—Normal dog, meat diet. S, sugar per cent. × 1000; A, Amylolytic ferment per cent. × 10; D, Difference value per cent. × 1000; F, Fasting values; M, Meal.

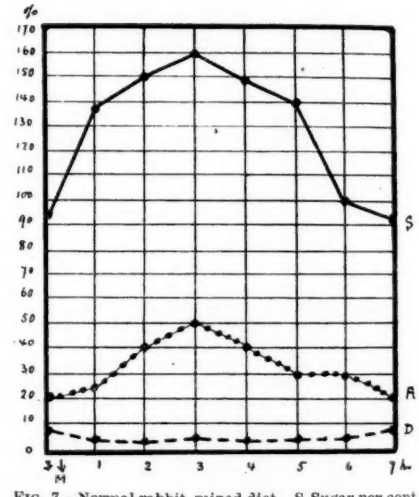



FIG. 7.—Normal rabbit, mixed diet. S, Sugar per cent. × 1000; A, Amylolytic ferment × 10; D, Difference value per cent. × 1000; F, Fasting values; M, Meal.

same direction after food, while there is a slight tendency for the difference value curve to follow an opposite course.

*The Effects of Pancreatectomy in the Dog.*

The influence exerted by the pancreas on the blood and urine of the dog was investigated by observing the effects of removing one-third, two-thirds, and practically the whole gland from three animals. All of them recovered satisfactorily from the operation; the wound healed well, and the animals were apparently in good health a week afterwards, when a series of blood analyses were commenced. For each series the dog was fasted for 18 to 24 hours, a sample of the fasting blood was taken for analysis, and it was then given a test-meal. An hour afterwards 3 c.cm. of blood were drawn from a vein in the ear, and similar specimens were subsequently taken at hourly intervals for five or six hours without any further food being given. Estimations of the sugar content and of the difference value were then made with 2 c.cm. of each sample by the methods previously described, and the remaining 1 c.cm. was used to determine the amylolytic ferment. At the end of the experiment the dog was placed in a metabolic cage, and the urine passed during the 24 hours following the test-meal was collected. This was measured and the total excretion of sugar and the iodine coefficient were worked out.

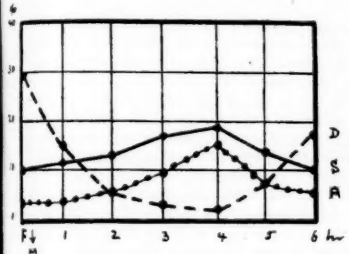



FIG. 8.—Dog, one-third depancreatised, mixed diet. S, Sugar per cent. × 1000; A, Amylolytic ferment per cent. × 10; D, Difference value per cent. × 1000; F, Fasting values; M, Meal.

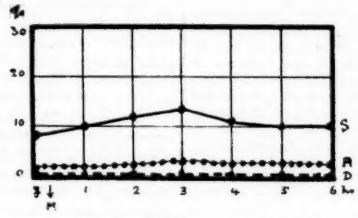



FIG. 9.—Normal dog, mixed diet. S, Sugar per cent. × 1000; A, Amylolytic ferment per cent. × 10; D, Difference value per cent. × 1000; F, Fasting values; M, meal.

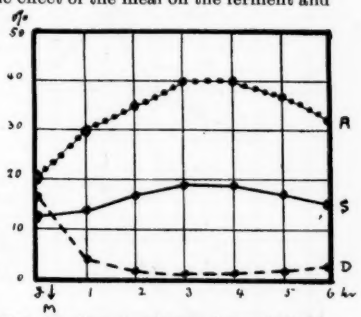



FIG. 10.—Dog, two-thirds depancreatised, mixed diet. S, Sugar per cent. × 1000; A, Amylolytic ferment per cent. × 10; D, Difference value per cent. × 1000; F, Fasting values; M, Meal.

*Removal of one-third of the pancreas.*—About one-third (2·7 g.) of the tail end of the pancreas was removed from the first dog. One week after the operation examination of the blood, taken fasting, showed 0·12 per cent. of sugar, a difference value of 0·38 per cent. and an amylolytic ferment of 5 per cent., compared with 0·09 per cent. sugar, a difference value of 0·004 per cent., and an amylolytic ferment of 2 per cent. under the same conditions before the operation. The removal of even a third of the pancreas had thus caused an enormous increase in the difference value, with only a slight rise in the sugar and amylolytic ferment. That this change was not dependent upon the immediate effects of surgical interference with the contents of the abdomen, but resulted from the removal of a portion of the pancreas, is shown by the fact that five weeks later a sample of blood taken after a 24 hours' fast contained 0·10 per cent. of sugar, gave a difference value of 0·30 per cent., and showed an amylolytic ferment of 7 per cent.

The effect of a mixed diet containing about 120 g. of carbohydrate, including 1 ounce of marmalade, was then investigated, with the results shown in Table I.:—

TABLE I.

| — | Fasting | — | 1 hr. | 2 hrs. | 3 hrs. | 4 hrs. | 5 hrs. | 6 hrs. |
|---|---|---|---|---|---|---|---|---|
| Sugar per cent.. | 0·100 | Mixed meal. | 0·110 | 0·130 | 0·170 | 0·190 | 0·140 | 0·100 |
| Hydrolysis value per cent. ... | 0·400 | | 0·260 | 0·200 | 0·200 | 0·200 | 0·200 | 0·280 |
| Difference value per cent. ... | 0·300 | | 0·150 | 0·070 | 0·030 | 0·010 | 0·060 | 0·180 |
| Amylolytic ferment per cent. | 7 | | 7 | 13 | 17 | 30 | 12 | 10 |

The relation of these figures is seen in the chart. (Fig. 8.) For comparison the results obtained with a normal dog on the same diet, drawn to the same scale, are also shown. (Fig. 9.)

*Removal of two-thirds of the pancreas.*—The dog on which this operation was performed had normal fasting values of 0·09 per cent. for sugar, 2 per cent. for the amylolytic ferment, and a 0·006 per cent. difference value. Three weeks after the operation, at which two-thirds (10 g.) of the body and tail of the pancreas were removed, these values had risen to 0·13 per cent. for the sugar, 20 per cent. for the ferment, and 0·170 per cent. for the difference value. There was thus a slightly higher sugar, a marked increase in the ferment, and a considerably lower difference value than in the dog from which only one-third of the gland had been removed when specimens of blood were examined under the same conditions. After a mixed meal of similar composition to that given to the first dog the sugar content of the blood began to rise more quickly, but the maximum level attained was only slightly higher, and the return to the fasting level took longer. The effect of the meal on the ferment and difference values of the blood was much more striking, the former rising more quickly and to a much higher level than in the dog from which one-third of the pancreas had been removed, and the latter falling more rapidly until almost a normal value was found at the third hour; the subsequent rise in the difference value was also much slower. The figures obtained in this experiment were as shown in Table II.:—

TABLE II.

| — | Fasting | — | 1 hr. | 2 hrs. | 3 hrs. | 4 hrs. | 5 hrs. | 6 hrs. |
|---|---|---|---|---|---|---|---|---|
| Sugar per cent. | 0·130 | Mixed meal. | 0·140 | 0·170 | 0·190 | 0·190 | 0·176 | 0·150 |
| Hydrolysis value per cent. ... | 0·300 | | 0·180 | 0·190 | 0·200 | 0·200 | 0·190 | 0·180 |
| Difference value per cent. ... | 0·170 | | 0·040 | 0·020 | 0·010 | 0·010 | 0·014 | 0·030 |
| Amylolytic ferment per cent. | 20 | | 30 | 35 | 40 | 40 | 37 | 32 |

These results are represented graphically in the chart. (Fig. 10.) In the 24 hours following the test diet the one-third depancreatised dog passed 300 c.cm. of urine containing 0·3 per cent. of sugar and with an iodine coefficient of 20 per cent., giving total excretions of 0·9 g. of sugar and 60 iodine coefficient units. The two-thirds depancreatised dog excreted 500 c.cm. of urine containing 0·7 per cent. of sugar and with an iodine coefficient of 10 per cent., working out at 3·5 g. of sugar and 50 iodine coefficient units for the 24 hours. The dog from which the larger proportion of the pancreas had been removed therefore passed more sugar, but less dextrin, in the same space of time when they were on similar diets, results corresponding to the higher level of the sugar curve and the lower difference values obtained with the blood.

TABLE III.

| — | Fasting | — | 1 hr. | 2 hrs. | 3 hrs. | 4 hrs. | 5 hrs. |
|---|---|---|---|---|---|---|---|
| Sugar per cent. ... ... | 0·190 | Mixed meal. | 0·210 | 0·240 | 0·300 | 0·500 | 0·400 |
| Hydrolysis value per cent. ... ... ... ... | 0·200 | | 0·210 | 0·240 | 0·300 | 0·500 | 0·400 |
| Difference value per cent. ... ... ... ... | 0·010 | | 0·000 | 0·000 | 0·000 | 0·000 | 0·000 |
| Amylolytic ferment per cent. ... ... ... | 50 | | 60 | 65 | 70 | 85 | 75 |

*Total pancreatectomy.*—Practically the whole of the pancreas (17·5 g.) was removed from this dog at one operation. It made a good recovery, and, although losing weight and passing typical fatty stools, remained lively and free from complications until death from diabetic coma, experimentally induced, occurred a fortnight later. Careful dissection post mortem showed only 0·2 g. of pancreatic

tissue remaining. Three days after the operation the fasting blood was found to contain 0·19 per cent. of sugar, with an amylolytic ferment of 50 per cent. and a difference value of 0·010 per cent. A mixed meal, of the same composition as that given to the other two dogs, next day brought about the changes in the blood values shown in Table III.

In graphic form these results are represented, on the same scale as for the other two dogs, in the chart. (Fig. 11.) It will be seen that total removal of the pancreas induced a much higher level of sugar in the blood, both fasting and after the test meal, than in either of the other two animals. The output of sugar in the urine was correspondingly increased, specimens obtained by catheter showing 8 per cent. two hours after the meal and 11 per cent. at the fourth hour. There was also a very marked rise in the amylolytic ferment. The difference value, on the other hand, was much lower in the fasting state and was reduced to zero by the end of the first hour. At the end of the fifth hour, when the last analysis was made, it was still absent.

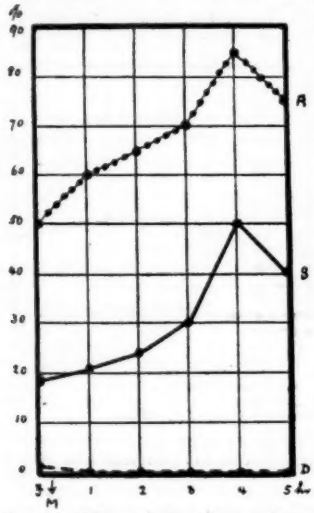



FIG. 11.—Dog, totally depancreatised, mixed diet. S, Sugar per cent. × 1000; A, Amylolytic ferment per cent. × 10; D, Difference value per cent. × 1000; F, Fasting values; M, meal.

*Discussion of the Results.*

The results of these experiments on animals confirm the conclusions based upon clinical observation previously described. They show that the difference value of the blood varies inversely with the percentages of sugar and amylolytic ferment, both fasting and after a meal. They also show that the difference value of the blood and the iodine coefficient of the urine are related to the functional activity of the pancreas. When this is interfered with the difference value rises to abnormal heights, the increase being greatest in the fasting condition and in the earlier stages of pancreatic insufficiency. After a meal, and as the functions of the pancreas are less efficiently performed, the difference value of the blood diminishes again, so that when practically the whole of the gland is removed, with consequent very pronounced hyperglycæmia and glycosuria, the difference value drops to almost the normal level during fasting and disappears entirely for some hours after a meal. It would seem, therefore, that an increase in the difference value of the blood and in the iodine coefficient of the urine above normal values indicates an early stage of defective carbohydrate metabolism due to interference with the functions of the pancreas, but that as the defect increases and frank hyperglycæmia and glycosuria develop the difference value and iodine coefficient fall to a corresponding degree—that is to say, an abnormal increase in the difference value of the blood or in the iodine coefficient of the urine is a sign of a prediabetic condition dependent upon a defect in the functional activity of the pancreas. A similar conclusion was arrived at by one of us on clinical grounds in 1913, when the history of a case of chronic pancreatitis, which eventually became diabetic, was described.[12] It was then shown that the iodine coefficient in the urine increased as the disease progressed, until glycosuria developed, when it gradually fell as the excretion of sugar became larger.

The fact that the difference value and the sugar content of the blood move regularly in opposite directions, both after a meal and as the functional capacity of the pancreas diminishes, points to their having a common origin and being controlled by the same influences. One controlling influence which determines their relation appears to be the functional activity of the pancreas, and although the increase in the difference value in the earlier stages of pancreatitis, or when a small portion of the gland is removed, with the subsequent fall which occurs as the cirrhotic changes in the gland advance, or more of the organ is removed, might suggest that the substance in the blood on which the difference value depends is derived from the pancreas itself, this would not explain the relation of the difference value to the sugar or account for the rapid fall during digestion. Further, it does not seem likely that the dextrin-like bodies giving rise to the iodine coefficient in the urine, and probably the difference value of the blood, would be set free in the circulation in sufficient amount to explain the results obtained.

The simplest explanation of the difference value of the blood, and the iodine coefficient of the urine, would be the presence in the peripheral circulation of dialysable dextrins absorbed from the alimentary tract, and that this may be a partial cause under certain circumstances is shown by the effect of feeding a depancreatised dog on a diet of dextrinised oatmeal. On comparing the chart (Fig. 12) representing the blood changes after a meal of dextrinised oatmeal in a dog from which two-thirds of the pancreas had been removed with the chart from the same dog after a mixed meal (Fig. 8), it will be seen that, although the sugar curves are much the same in amplitude, the difference value curve after the oatmeal is slower in falling, and does not reach the same low level as when a mixed meal was taken, suggesting that more hydrolysable carbohydrate was passing into the peripheral circulation in the former case than in the latter. When, however, the same experiments were tried with a totally depancreatised dog similar difference value curves were obtained with dextrinised oatmeal and with a mixed feed. This, with the fact that a meal of meat only (Fig. 13) gave the same difference value curve as a mixed meal containing carbohydrate in all the dogs, points to the comparatively slight variation following dextrinised oatmeal in the one-third and two-thirds depancreatised dogs being only a partial and exceptional cause of the difference value in the blood and not the usual explanation.

A study of the portal and peripheral blood taken from rabbits after fasting for 24 hours, three hours after a meal of dry oatmeal and three hours after being fed on dextrinised oatmeal, offers an explanation of the variations in the results obtained with these foods, and incidentally shows that a considerable proportion of a thoroughly cooked starchy food is absorbed into the portal blood in the form of dextrins and maltose, whereas an uncooked starch is almost completely broken down to dextrose before it appears in the portal vein. One set of experiments gave the results shown in Table IV.:—

TABLE IV.

| | Marginal vein. | | | Mesenteric vein. | | |
|---|---|---|---|---|---|---|
| | Fasting. | Dry oats. | Dext. oatml. | Fasting. | Dry oats. | Dext. oatml. |
| Sugar per cent. ... | 0·090 | 0·150 | 0·156 | 0·094 | 0·240 | 0·300 |
| Hydrolysis value per cent. ... ... | 0·092 | 0·154 | 0·160 | 0·096 | 0·250 | 0·500 |
| Difference value per cent. ... ... | 0·002 | 0·004 | 0·004 | 0·002 | 0·010 | 0·200 |

From these figures it will be seen that, while the difference value of the mesenteric blood is increased five times after a meal of dry oats, it is increased a hundredfold by a feed of dextrinised oatmeal, whereas the sugar value is only increased about two and a half times and three times respectively, suggesting that a large proportion of the dextrinised food is absorbed into the portal circulation in a hydrolysable form and not as dextrose. Actual analysis of the mixed blood from one set of rabbits taken after a feed with dry oats and of another set after a meal of dextrinised oatmeal confirmed these conclusions, for the proportion of dextrose

[12] XVII. Int. Cong. of Med., London, August, 1913, Med. Sect., p. 305.

in the latter was found to be considerably less than the proportion of dextrose in the former, while the percentages of dextrin and maltose were much increased, especially the dextrin, as shown by the figures in Table V.

TABLE V.—*Analysis of Portal Blood.*

| — | Dextrose per cent. | Dextrin per cent. | Maltose per cent. |
|---|---|---|---|
| Dry oats ... ... ... ... ... | 96 | 1·6 | 2·4 |
| Dextrinised oatmeal ... ... | .60 | 25·0 | 15·0 |

Most of the dextrose and nearly all the hydrolysable carbohydrate are apparently stopped in the liver, however, for on comparing the figures given by the blood from the marginal vein it will be seen that the percentage of sugar is practically the same after both dry oats and dextrinised oatmeal, and that it is only increased above the fasting value about one and a half times against two and á half times and three times in the mesenteric blood for dry oats and dextrinised oatmeal respectively. A still larger proportion of the hydrolysable carbohydrate appears to be retained in the liver, for the difference value of the blood from the marginal vein was only doubled after both feeds, though mesenteric blood taken at the same time showed a hundredfold increase in the difference value after the dextrinised food. It is therefore evident that as long as the liver is functioning normally the ingestion and absorption of dextrinised starches exert comparatively little influence on the difference value of the peripheral blood. Another argument in support of this conclusion is that the highest difference value in depancreatised dogs is found in the fasting condition, the reverse of what one would expect if it were directly dependent upon carbohydrate material absorbed from the alimentary tract.

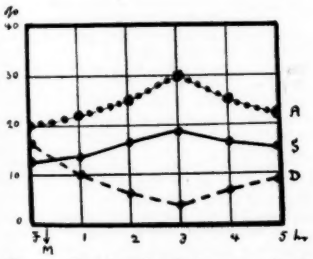



FIG. 12.—Dog, two-thirds depancreatised, dextrinised oatmeal diet. S, Sugar per cent. × 1000; A, Amylolytic ferment per cent. × 10; D, Difference value per cent. × 1000; F, Fasting values; M, Meal.

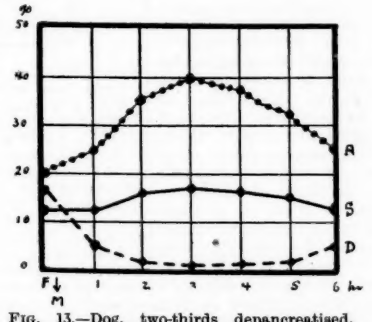



FIG. 13.—Dog, two-thirds depancreatised, meat diet. S, Sugar per cent. × 1000; A, Amylolytic ferment per cent. × 10; D, Difference value per cent. × 1000; F, Fasting values; M, Meal.

By a process of exclusion we are driven to the conclusion that the difference value of the peripheral blood arises from the presence of a hydrolysable carbohydrate, or carbohydrates, derived from the glycogen stores of the body, and of these the liver, being the largest, and as we have seen the situation in which such material coming from the intestine is held up, is probably the most important. The question which then arises is, What is the relation existing between the pancreas and liver, and why does the removal of a portion of the pancreas increase the difference value of the blood, whereas total pancreatectomy reduces it?

*Injection of an Extract of the Pancreas.*

Before discussing the possible answers to these questions, which might be based upon the effects of diminishing the physiological influence of the pancreas by excising portions of the gland, it is advisable that we should consider the results produced by the opposite procedure—namely, increasing it by injecting a fresh extract of the pancreas.

The pancreas of a fasting rabbit was removed as completely as possible immediately after death, cut up finely, and half of it ground in a mortar with 10 c.cm. of Locke's solution and sand. The resulting emulsion was then centrifugalised and 2 c.cm. of the clear supernatant liquid were injected into the marginal vein of another fasting rabbit after a sample of blood had been taken for analysis. Subsequently specimens of blood were taken at half-hourly intervals for two hours and analysed with the results shown in Table VI.

TABLE VI.

| — | Fasting | — | ½ hr. | 1 hr. | 1½ hrs | 2 hrs. |
|---|---|---|---|---|---|---|
| Sugar per cent. ... ... ... | 0·086 | Injection 2 c.cm. pancreatic ext. | 0·080 | 0·070 | 0·080 | 0·086 |
| Hydrolysis value per cent. ... ... ... ... ... | 0·090 | | 0·080 | 0·070 | 0·080 | 0·086 |
| Difference value per cent. ... ... ... ... ... | 0·004 | | 0·000 | 0·000 | 0·000 | 0·000 |
| Amylolytic ferment per cent. ... ... ... ... ... | 2·0 | | 2·0 | 2·0 | 3·0 | 2·0 |

The injection gave rise to no apparent discomfort, and was not associated with any lowering of temperature or signs of shock, but the sugar content of the blood was depressed below the fasting level, and at the end of an hour stood at a figure far below any we have ever met with in a normal rabbit. Within half an hour of the injection the normal fasting difference value of 0·004 per cent. had disappeared, and it had not returned when the experiment was concluded. These effects are well seen in the chart. (Fig. 14.)

In order to exclude the influence of injected proteins and to demonstrate the dependence of the changes observed on ferment action we carried out a control experiment with another portion of the same extract which had been boiled and cooled previous to injection. This was found to have no effect on either the sugar or difference value of the blood, which remained at the fasting levels.

Taking these results in conjunction with the blood changes following pancreatectomy it seems probable that the pancreas exerts an inhibitory action on glycolysis, regulating the breaking down of stored carbohydrate into sugar and intermediate products by means of a ferment which is destroyed by heat. When the influence of the pancreas is completely removed, as in total pancreatectomy, stored and ingested carbohydrate is converted entirely into sugar by the uncontrolled activity of the glycolytic ferment of the tissues, with resulting marked hyperglycæmia and a normal or sub-normal difference value in the blood; when the functions of the gland are only partly interfered with, as in partial pancreatectomy, the first stage in the breaking down of glycogen is still abnormally active, so that an excess of the intermediate products of glycolysis, in the shape of dextrins, pass into the circulation, but the restraining influence of the pancreas is now sufficient to prevent further conversion to sugar, consequently the difference value of the blood rises, but the percentage of sugar is not appreciably affected; when, as in the injection experiments just described, the controlling influence of the pancreas is increased, on the other hand, the opposite effect to pancreatectomy is produced, the normal conversion of glycogen into simpler forms of carbohydrate which goes on even in the fasting condition being interfered with, so that dextrins disappear from the blood and the normal percentage of sugar is diminished.

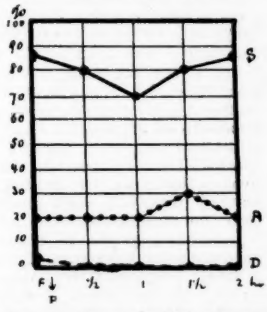



FIG. 14.—Normal rabbit, pancreas extract intravenously. S, Sugar per cent. × 1000; A, Amylolytic ferment per cent. × 10; D, Difference value per cent. × 1000; F, Fasting values; P, Pancreas extract injected.

*The Amylolytic Ferment of the Blood.*

We have previously pointed out that the amylolytic ferment content of the blood varies in pancreatic disease in the human subject directly with the percentage of sugar and inversely as the difference value. A study of the effects of pancreatectomy in dogs shows that this relation holds good under experimental conditions also. The figures and charts given in the second part of this paper demonstrate that as a larger proportion of the pancreas is removed, and the percentage of sugar in the blood rises, the percentage of amylolytic ferment increases correspondingly. Thus in a normal dog, when fasting, the amylolytic ferment of the blood averages about 2 per cent., when one-third of the pancreas had been removed we found 7 per cent., after the removal of two-thirds of the gland it had risen to 20 per cent., and in a dog from which the whole of the pancreas had been removed a fasting level of 50 per cent. was obtained. The corresponding sugar values of the blood rose from 0·09 per cent. for the normal dog to 0·10 per cent. for the one-third depancreatised animal, then to 0·13 per cent. for the two-thirds pancreatectomy, and finally to 0·19 per cent. after total pancreatectomy. The difference value, on the other hand, after an initial rise from 0·002 per cent., or thereabout, for the normal dog to 0·300 per cent. after the removal of one-third of the pancreas, fell to 0·170 per cent. when two-thirds of the gland were excised, and then to 0·010 per cent. after the whole organ had been removed. Such a constant and intimate relation between these values suggests that the percentage of sugar and the difference value of the blood are dependent upon the amount of amylolytic ferment. As long as the amylolytic ferment ranges within normal values the percentage of sugar does not exceed the normal limit of 0·15 per cent. and the difference value varies between 0·002 and 0·008 per cent., but when the amylolytic ferment rises to abnormal heights the breaking down of stored carbohydrate is accentuated. In the early stages, while the amylolytic ferment is only moderately increased, the intermediate products of glycolysis (dextrins) appear in the blood in abnormal amounts, but when the amylolytic ferment rises still higher these intermediate products are further broken down and the percentage of sugar steadily rises as they diminish, until finally all carbohydrate passing into the circulation does so in the form of dextrose. A relationship of the same type is seen in normal animals after a meal, and still better in one from which a small portion of the pancreas has been removed, for, as will be seen from the charts (Figs. 6, 7, 8, 9), the amylolytic ferment rises after food has been taken and with this rise there is a corresponding increase in the percentage of sugar and a fall in the difference value.

As the pancreas is the gland from which the amylolytic ferment required for the digestion of starches in the alimentary tract is chiefly derived it is tempting to assume, as has generally been done, that the amylolytic ferment of the blood and urine is also of pancreatic origin, but the evidence of our experiments is opposed to such an inference, for it is inconceivable that the ferment should appear in increasing amount as the organ from which it is supposed to be derived is diminished in size and that it should be at a maximum when the whole gland has been excised. There must therefore be some other origin for the amylolytic ferment of the blood, and the liver seems the most likely source. Since the days of Claude Bernard it has been known that the liver possesses glycolytic powers and that if the liver of an animal is kept at body temperature after death the contained glycogen quickly disappears and is replaced by sugar. The rapidity of this transformation after death and its comparative slowness during life have never been satisfactorily explained. Our experiments seem to offer a solution, and this lies in the antagonism between the internal secretion of the pancreas and the amylolytic ferment of the liver, the latter inducing glycolysis and the former restraining it; in other words, the internal secretion of the pancreas functions as a brake on the glycolytic activities of the liver ferment.

*Perfusion of the surviving liver.*—To test the validity of this view in another way we proceeded to carry out experiments with the "surviving" livers of rabbits, perfusing one series with Locke's solution, and another with a similar solution containing an extract of fresh pancreas prepared as in the previously described injection experiments.

The fluid flowing from a cannula in the superior vena cava was collected in each experiment for periods of 15 minutes at a time for 75 minutes. The total sugar and difference value for each period were worked out and, after the glycogen remaining in the liver had been determined at the end of the experiment, the percentage of glycogen, sugar, and difference value for each 15 minutes were calculated. The average result of three perfusions with the plain Locke's solution are shown in the diagram (Fig. 15) by light lines and the results of perfusion with Locke's solution containing fresh pancreatic extract are indicated by heavy lines.

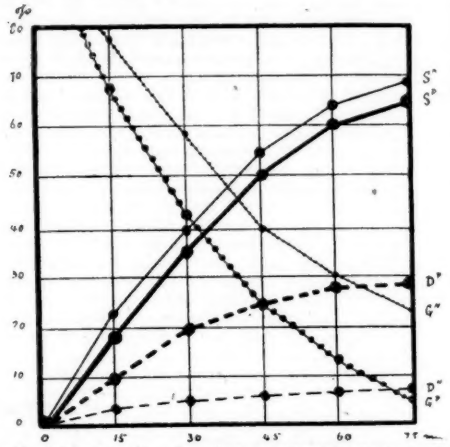



FIG. 15.—"Surviving liver" perfusions with plain Locke's solution (light lines) and with added pancreatic extract (heavy lines). Normal averages: Sn, Sugar per cent.; Dn, Difference value per cent.; Gn, Glycogen per cent. Pancreas extract: Sp, Sugar per cent.; Dp, Difference value per cent.; Gp, Glycogen per cent.

It will be seen that the addition of an extract of pancreas to the perfusion fluid caused an appreciable reduction in the amount of glycogen broken down. The output of sugar was diminished, but the difference value was considerably increased. These experiments with the surviving liver, therefore, lend support to the view that the pancreas exerts a restraining influence on the glycolytic ferment of the liver, interfering with the breaking down of glycogen and causing a relative increase in the production of the intermediate hydrolysable derivatives, with a diminution in the normal end-product, reducing sugar. As the perfused extract was prepared from the whole pancreas, and consequently contained the zymogen of the external as well as the internal secretion of the gland, the possible effect of the former must be taken into account, and it may be that its presence accounts to some extent for the very considerable increase in the difference value.

*Summary.*

The animal experiments described confirm the conclusions arrived at on clinical grounds. In addition they show that:—

(1) The rise in the difference value of the blood resulting from interference with the functions of the pancreas insufficient to produce frank hyperglycæmia and glycosuria, diminishes as the volume of the gland is further reduced and the percentage of sugar in the blood and the excretion of sugar in the urine rise.

(2) The hydrolysable substance in the blood on which the difference value depends appears to be derived chiefly from the glycogen stores of the liver, and is an intermediate soluble product (dextrin) formed in the conversion of glycogen to sugar.

(3) The liver contains an amylolytic ferment which passes into the blood and urine, and it is as a result of its activity that the glycogen of the liver is broken down.

(4) The pancreas exerts a restraining influence on the glycolytic ferment of the liver, probably through its internal secretion.

(5) Normally, the balance between the glycolytic ferment of the liver and the internal secretion of the pancreas is maintained in such a way as to keep the

percentage of sugar, and the difference value of the blood, within well-defined limits; when this balance is interfered with abnormal relations result.

(6) A relative increase in the pancreatic secretion causes a fall in the percentage of sugar and in the difference value of the blood.

(7) A relative diminution in the secretion of the pancreas, with consequent greater liberty of action on the part of the glycolytic ferment of the liver, gives rise in the early stages to an increased formation of the intermediate products of glycogen degradation without any change in the sugar, and in the later stages to an increasing sugar production with a proportional diminution in the intermediate products.

(8) The appearance in the blood and urine of intermediate products of carbohydrate metabolism, as shown by the difference value of the blood and the iodine coefficient of the urine, indicates a prediabetic condition which, if allowed to progress unchecked, will be followed by hyperglycæmia and glycosuria.

(9) Incidentally it has been shown that a considerable proportion of a well-boiled starch is absorbed into the portal circulation in the form of dextrins and maltose, whereas an uncooked starch enters the portal blood chiefly as dextrose.

# Clinical Notes:

## MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

### THE ANTIDIURETIC EFFECT OF PITUITARY EXTRACT IN DIABETES INSIPIDUS.

By MAURICE DAVIDSON, M.A., M.D. OXON., M.R.C.P. LOND.,
PHYSICIAN TO OUT-PATIENTS, ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN.

IN April, 1919, there appeared in the *Quarterly Journal of Medicine* an interesting account of some observations by Drs. E. L. Kennaway and J. C. Mottram upon the antidiuretic effects of pituitary extract in diabetes insipidus with a detailed account of two cases. In view of the comparative rarity of this condition I now record the following notes of a case recently under my care in which injections of pituitrin were given, and observations made upon the total output of urine in the 24 hours, as well as notes on the amount and specific gravity of the samples collected at frequent intervals after the injections. The injections were always followed by an action of the bowels, and on the first occasion by vomiting, but except for this no untoward effects were observed. Apart from the discomfort and annoyance of the symptoms the patient suffered no inconvenience beyond that of a slight bronchitis, which yielded to treatment. There were no symptoms or signs to suggest any associated disorder of the pituitary gland.

The patient, an ex-soldier, aged 35, was admitted to the wards of the Miller General Hospital on May 21st, 1920. He gave the following history. He had always been a healthy man until he was invalided from the Salonika front in the winter of 1917 with bronchitis and nephritis (*sic*). He was sent back to England, and while in hospital at Malta, en route, he began to complain of polyuria for the first time. He was treated for bronchitis and asthma, but no special attention was paid to the other condition.

On admission to the Miller Hospital his condition was as follows:—He was a healthy looking well-developed man. He complained of some cough and of great thirst, and continual polyuria. On examination he had signs of some bronchitis; medium rhonchi were audible all over both lungs without moist sounds; there was a moderate amount of expectoration. He was treated for this with belladonna and stramonium, and the physical signs in the chest cleared up. The heart was normal. There was no sign of œdema of the face or legs, nor was there any albuminuria. His visual fields were not diminished; the appearance of the fundus oculi on both sides was normal. A skiagram of the skull showed no abnormality of the sella turcica. From the time of his admission he suffered continually from intense thirst, and was allowed as much water as he wanted day and night. The urine was pale, acid in reaction, of low specific gravity (1000), and contained no sugar or albumin. The amount passed per 24 hours averaged just over 300 oz.

It was decided to administer hypodermic injections of pituitary extract in order to observe its effect upon the diuresis, and to see whether after continuing the injections for some time any permanent or lasting effect was obtained. The results are shown in Table I. It will be seen from this table that the antidiuretic effect of the pituitrin was such as to cause an appreciable diminution in the total excretion of urine in the 24 hours. The effect was much more pronounced during the period shortly following the injections as may be seen from the record of the hourly collection of specimens of urine. (Table II.) After June 3rd (thirteenth day after admission) several doses of pituitrin were given by the mouth, but without any appreciable effect upon the amount of urine secreted. The polyuria continued, the man's general condition being satisfactory and the bronchitis and asthma having completely cleared up. He was discharged from hospital in order to go for a short time into a convalescent home.

TABLE I.—*Quantity of Fluid Taken and Urine Passed.*

| Days after admission on 21/5/20. | Pints of fluid taken per 24 hrs. | Ounces of urine passed per 24 hrs. | Days after admission on 21/5/20. | Pints of fluid taken per 24 hrs. | Ounces of urine passed per 24 hrs. |
|---|---|---|---|---|---|
| 1 | 28 | 238 | 14 | 23 | 348 |
| 2 | 23 | 313 | 15 | 25 | 400 |
| 3 | 24·5 | 320 | 16 | 23 | 390 |
| 4 | 20 | 312 | 17 | 24 | 350 |
| 5 | 26 | 309 | 18 | 23 | 410 |
| 6 (See Table II.) | 6* | 340 | 19 | 22 | 350 |
| 7 (See Table II.) | 18 | 54 | 20 | 20 | 326 |
| 8 (See Table II.) | 17 | 145 | 21 | 22 | 328 |
| 9 (See Table II.) | 18 | 140 | 22 | 20 | 288 |
| 10 (See Table II.) | 15 | 155 | 23 | 22 | 294 |
| 11 (See Table II.) | 21 | 252 | 24 | 22 | 304 |
| 12 | 24 | 244 | 25 | 24 | 320 |
| 13 | 22 | 278 | 26 | 21 | 304 |

* Evening measure of intake not recorded.

From the sixth to the twelfth days injections of pituitrin were given daily as shown in Table II.

Body-weight on fourth day 9 st. 9 lb., on eleventh day 9 st. 7½ lb., on nineteenth day 9 st. 6 lb., on 26th day 9 st. 3½ lb.

TABLE II.—*Hourly Record of Urine after Injection.*

| Date in 1920. | *Injections of pituitrin* and urine collected. | Specific gravity. | Date in 1920. | *Injections of pituitrin* and urine collected. | Specific gravity. |
|---|---|---|---|---|---|
| 27/5 | *1 c.cm. at 7 p.m.* | | 30/5 | *1 c.cm. at 6.30 p.m.* | |
| | 8 P.M. ... 12 oz. | 1000 | | 9.30 P.M. ... 3 oz. | 1015 |
| | 9 P.M. ... 6 oz. | 1007 | 31/5 | *0·5 c.cm. at 11.30 a.m.* | 1005 |
| | 10 P.M. ... 2 oz. | — | | *0·5 c.cm. at 11.10 p.m.* | 1010 |
| 28/5 | 6 A.M. ... 16 oz. | 1010 | 1/6 | 12.10 A.M. ... 24 oz. | 1000 |
| | *1 c.cm. at 7 p.m.* | | | 5.30 A.M. ... 20 oz. | 1005 |
| | 8 P.M. ... 3 oz. | — | | *1 c.cm. at 9 p.m.* | |
| | 11 P.M. ... 4 oz. | 1018 | | 10 P.M. ... 8 oz. | 1000 |
| 29/5 | 6.30 A.M. ... 15 oz. | 1015 | 2/6 | 6 A.M. ... 10 oz. | 1005 |
| | *1 c.cm. at 12.15 p.m.* | | | *1 c.cm. at 11.45 p.m.* | |
| | 12.30 P.M. ... 24 oz. | 1000 | | 12 mdn. ... 10 oz. | 1000 |
| | 1.15 P.M. ... 3 oz. | 1000 | | | |
| | 6 P.M. ... 24 oz. | 1008 | 3/6 | 6 A.M. ... 12 oz. | 1015 |
| | 8 P.M. ... 2 oz. | 1010 | | | |

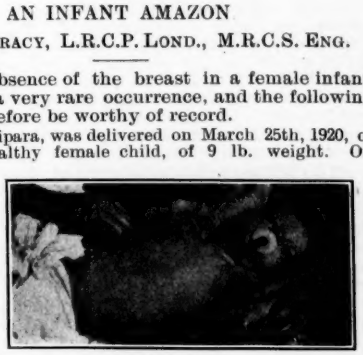
Wimpole-street, W.

### AN INFANT AMAZON

By D. S. PRACY, L.R.C.P. LOND., M.R.C.S. ENG.

COMPLETE absence of the breast in a female infant appears to be a very rare occurrence, and the following case may therefore be worthy of record.

Mrs. K., multipara, was delivered on March 25th, 1920, of a full-term, healthy female child, of 9 lb. weight. On examination of the infant I found that there was complete absence of the left breast and nipple, and absence of the major part of the anterior axillary wall, due to absence of the costo-sternal portion of the great pectoral muscle.



The accompanying illustration shows the child at the age of 6 weeks.

Atherstone.

# Medical Societies.

## MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

*Annual Meeting.*

AT the seventy-ninth annual meeting of the Medico-Psychological Association, held at the Mental Hospital, Cheddleton, and at the Town Hall, Buxton, Dr. BEDFORD PIERCE, the retiring President, was in the chair. There was a large muster of members, and an unusual feature was the excellent concert given in the recreation hall of the Mental Hospital by the orchestra, of which Dr. W. F. Menzies is conductor.

*The Minimal Requirements for a Small Clinical Laboratory.*

Dr. W. G. THOMSON read a paper on this subject, in which he discussed the best way to set about providing the apparatus needed for routine investigations on nerve tissue, blood, cerebro-spinal fluid, and excreta, and for clinical tests in institutions at which there is no whole-time expert pathologist. The minimal cost of such equipment he estimated at £115.

Dr. TOM WILLIAMS (Washington, D.C.) spoke of the method carried out in America for centralising the laboratory and teaching work of a number of asylums in the same State; and said that members of the asylum staffs periodically attended these centres.

Dr. J. MIDDLEMASS spoke of the great benefit of being able to conduct routine examinations at one's own hospital. Simple examinations of the cortex of the brain, in his own experience, had cleared up many obscure cases. Every asylum would be the better for some such equipment as Dr. Thomson had indicated.

Lieutenant-Colonel E. W. WHITE proposed that the cordial thanks of the Association be tendered to Dr. Bedford Pierce, the retiring President, and also to the other officers for their services.—Dr. J. B. SPENCE seconded, remarking specially on the work of the Registrar (Dr. A. Miller), and the secretary (Dr. R. Worth).—Dr. BEDFORD PIERCE replied.

The PRESIDENT, in introducing Dr. W. F. Menzies, superintendent of the Mental Hospital, Cheddleton, as President for the coming year, extolled his thoughtful work in the specialty, and his many services for the Association.

*Presidential Address: The Mechanism of Involutionary Melancholia.*

Dr. MENZIES then gave an exhaustive address on this subject. He said that at the present time, when the claims of psychogenic treatment were attracting even the lay mind, it befitted those who believed that beneath every mental process there was a mechanical basis to ask themselves whether they were quite blameless if easily understood psychological explanations were substituted for the much more intricate and complex physiological ones. Had alienists always applied to the problems of nervous physics all the available knowledge? Twenty years ago Crookshank endeavoured to correlate physical signs with mental conditions, and 15 years later Dunlop Robertson drew attention to the importance of adrenalin in the production of depression. Those engaged in this specialty should be willing to apply to it the simpler tests of the physiologist and the chemist. The type of illness he had chosen for this address comprised two distinct processes, and his aim was, by tracing the conditions present in both, to offer some explanations as to the proximate causes underlying: (1) involution, and (2) depression. The psychology of melancholia was the depressive emotion; the anatomy of the depressive emotion was a sympatheticotonus, and the chemistry of the latter was an endogenous anoxæmia. Dr. Menzies expressed his indebtedness for clinical and laboratory observations to Dr. W. D. Wilkins and Dr. W. G. Thomson. At the involutionary period a most important factor was excessive intestinal putrefaction. This needed consideration, for though constipation and dementia were common in old age, only a few old people were depressed. Intestinal stasis was certainly very common among the insane, and bands and fine adhesions were evident when looked for; and he reminded the meeting of the theory of Sir William Arbuthnot Lane as to the causation of these. Yet in young neurotic persons it was sometimes possible to make out an undue breadth of colon, unequal dilatation of stomach, with exaggerated flexion at the angular notch, and tonic contraction of one or other rectus muscle, though a daily emptying of the bowel took place. Keith believed that enterostasis was due to nodal segments, and Dr. Menzies thought that both Keith and Lane might be right. He then entered on a lengthy consideration of the various digestive products elaborated in the intestine and of the views generally held about them. To understand the connexion between bacterial absorption and melancholia it was essential to have an anatomical basis to work upon, and that basis existed in the involuntary nervous system; its importance could not be over-estimated. In regard to the physiology of the emotions, it had long been recognised that fear could cause certain superficial presentations, but only comparatively recently had systematic efforts been made to trace the technique, especially by Pavlow, Hornberg, Müller, and Bickel. The next step was to show that the inhibition caused by the emotional impulses was closely connected with the activity of the involuntary nervous system. Bayliss and Starling proved that all the phenomena of digestion in the mouth, stomach, and duodenum could be stimulated if an acid fluid were applied to the duodenal mucous membrane after the nerves had been divided, showing that another important factor was at work in body processes; this factor was named the action of hormones. The sympathetic system could generally overcome the autonomic, but did not persist so long. Cannon considered that the autonomic system quietly built up the body reserves against a time of stress, its operations having but little effect on the tone. Many phenomena produced by emotion and by the nervous outflow from the involuntary system were closely duplicated by the effects of adrenalin, as Oliver and Schäfer showed in 1894. Dr. Menzies proceeded to recount the physiological properties which had been observed to follow the giving of adrenal extract, from which it was clear that an emotional outflow was at one with the sympatheticotonus and was accompanied by an increase of adrenalin acting as a hormone. It had long been known that severe emotion produced diabetes, and a large number of observers noted that glycosuria was common in melancholia, the amount of sugar in the urine varying with the degree of depression. Glycosuria was easily produced in excited cats, and it was often found in football players and in some of the spectators. A better indication, however, was derived from an estimation of the blood sugar. In melancholia alone was glycæmia unduly high before meals.

Dr. Menzies next considered the conduction of nerve impulses before they reached the cerebral cortex and the possible paths by which those subserving feeling-tone might travel. Head's brilliant conceptions of the nature of sensation had added a new chapter to the science of neurology, and these he discussed fully. Ramsey Hunt had enunciated the theory that two distinct systems of motor fibres to skeletal muscles exist—(1) the paleokinetic, to the sarcoplasmic substance, associated with slow tonic contraction; (2) the neokinetic, to the sarcostyles, associated with the quick, spasmodic, "voluntary" contraction. Hunt held that the principle was carried right through from the periphery to the centre, and was also represented in the cerebellum, and clinical evidence was adduced from the observed differences between the two forms of muscular hypertonus. The matter could not, however, yet be regarded as settled. Dr. Menzies then discussed the various paths separately, and proceeded to consider the question of thalamic sensations. Head codified the nature of thalamic sensations and showed that partial interruption of the thalamocortical path had a profound influence in releasing sensations registered in the thalamus from the inhibitory effects

of cortical activity. Normally, all sensations reaching the thalamus were subjected to minute analysis in the cortex and allowed or censored after judgment had been passed. But in certain diseased conditions either the connecting path was impaired, or the cerebral cortex was unfit to function, and then the sensation rose to the dignity of an emotion, which could be regarded as a temporary flood in a stream of feeling-tones. All feeling-tones did not eventuate in emotion, nor were all defensive emotions tornadoes; they might develop slowly, and last for weeks, even months, and such a condition constituted depression. In melancholia there appeared to be a chronic hyperadrenalism. He went on to review the signs present in states of depression, and considered next the exaltive emotion. The thalamus was the centre which presided alike over the depressive and exaltive feeling-tones and emotions.

After considering the functions of the cerebral cortex, the Betz cells, the layers of the cortex, the pre-Rolandic cortex, the post-Rolandic cortex, Dr. Menzies proceeded to consider the cortex in disease, remarking that our chief knowledge of the course followed by the cerebro-spinal fluid had been gained by observing the process of brain atrophy, and the distribution of the areas of wasting in dementia. It was plain, he said, that involutionary processes were independent of the mental state which might accompany them, though both, in some cases, might be dependent on the same causes. Involution was a march of gradually increasing cytolysis, and appreciably depended upon the power of reaction of the hepatic antitoxins to the intestinal toxins, the penalty of failure being defective oxidation. What was known as melancholia depended on modifications of the same processes, especially on excessive bacterial fermentation and enterostasis. Alienists were now, apparently, on the way to a better understanding of the problems underlying the origin of the psychoses. Science waited upon the chemist, who, in turn, waited upon the clinician; cases must be observed with a more scientific eye. At the present time more kudos was to be gained from selling a sow than from sensitising a serum, from taking twopence off the maintenance rate than from discovering how dysentery was propagated. The man of science had ever been the Cinderella of the profession, and the beggarly salary of a head clerk was supposed to be sufficient for a brilliant pathologist. But there was now a dawn on the horizon; the war had cast over the art of medicine a new spirit, and the brilliant results attained in preventive fields by organised research had proved that money so spent was a good investment to the nation. The Board of Control had commenced a campaign, so that it was hoped that before many years each mental hospital would have its triad of trained observers—pathologist, biochemist, clinician. In conclusion, Dr. Menzies said he had suggested a few problems which he hoped might raise curiosity and criticism.

*Some Determinants of Morbid Emotionalism.*

On Wednesday morning, at the Town Hall, Buxton, with the President in the chair, Dr. WILLIAMS gave a contribution on this subject. He said emotility was, until the present century, dealt with in a purely introspective and observational manner. It was difficult to understand how there could be reactivity without that state of feeling which was known as emotility; even a unicellular organism, which had no differentiated nervous system, must have a state of feeling at the moment of being repelled by a stimulus. And on passing up the animal scale we could observe the difference between the manifestation of a state of feeling or emotion and the more purely purposive manifestations which were regarded as associated with the cerebro-spinal nervous system. An emotion was the function of the whole organism. The individual who was not emotive was morbid, abnormal. He went on to explain the states which he regarded as indicating morbid emotility, from the ordinary "blues" of a temporary character to more serious states, especially the "phobiacs," who had met with a series of circumstances which they had been unable to transcend. In these cases the emotion did not cease as soon as its determinant ceased. He described his process of re-education aimed at the cure of the condition.

*The Value of Psychoanalytic Teaching.*

There were then submitted to the meeting three contributions on psychoanalysis. The first was by Dr. W. H. B. STODDART and was entitled "A Brief Résumé of Freud's Psychology." He considered Freud the greatest psychologist who had ever lived. An unpleasant memory was not thrown away into space, but could be revived by such processes as hypnotism and psychoanalysis. The driving of unpleasant thoughts deeper into the mind was known as "repression," an automatic mechanism to protect the individual from intolerable thoughts. A constellation of repressed ideas was known as a "complex" and inhabited the unconscious mind. But a desire which had been banished from the conscious was constantly striving for recognition and gratification. As the conscious would not allow this, such gratification must be achieved in a distorted guise; it was sublimated in various activities. If the patient did not remain normal he gratified his complexes by the creation of symptoms. Neuroses, psychoses, and dreams were fundamentally the same, the only difference being that the neurotic or psychotic lived his dream. Freud held that forgotten infantile desires and interests remained permanent throughout life, and that many adult activities owed their energy to primitive infantile impulses; any neurotic or psychotic manifestation among members of his own family, especially the father or mother, had a profound effect on the mental development of the child. With regard to the sexual problems Freud did not really extend the meaning of the word sexual to include the young child; he merely recognised certain infantile activities to be of a sexual nature, because they would be regarded as sexual by everybody if they occurred in an adult. Freud would be the first to admit that such activities were quite innocent in a child. Opposition to this belief was largely due to the topic of sex being taboo. Sexual indulgence was regarded as a crime except in wedlock. Sexual topics were far more banned than those of theft, murder, and other crimes. Yet engagements and marriages were of great interest to the very people who banned intimately sexual topics. The outcome of this banning was found in certain data regarding the sexual perversions — homosexuality, masochism, sadism, fetishism, masturbation. An enormous number of people were homosexual without knowing it. Probably Freud was right when he said nobody was quite normal sexually; hence repression achieved the force of an inborn instinct. Professor Clifford Allbutt, in his recent presidential address at Cambridge, expressed his thankfulness that it did not fall to his lot to seek for pearls in that sty, and although the professor prepared a public criticism of the method he did not even take the trouble to learn anything about it. Dr. Stoddart hoped members of this association would not be led from the path of scientific investigation by sentimental objections based on their own psychic make-up. He proceeded to point out that in psychoanalysis the analyser said nothing; he only encouraged the patient to unfold his own story.

*Homosexuality.*

Dr. C. STANFORD READ read a paper on Homosexuality. The revolt of the moral sense against the idea of homosexuality was attributed by Freud in great part to the existence in the ordinary mind of a homosexual component of the sex instinct, which found indirect expression in the condemnation of homosexuality in others. But man was not the purely reasoning individual he believed himself to be: he was largely swayed by unconscious emotional forces which warped his thought and action. A study of the perversion was necessary to the mental physician for an understanding of the human problems with which he had to deal. He hoped the present wider study of Freudism would arouse a discontent with the old more or less purely descriptive psychiatry. Homosexuality in its conscious form, when it was carried into overt action, was far more prevalent than was usually supposed. It was needful to differentiate the passive from the active

form; the first was a developmental abnormality, the latter was acquired in the course of mental growth, and must be considered as a neurosis. He proceeded to elaborate the Freudian doctrine, pointing out the connexion between paranoia and latent homosexuality, and showing that psychoanalysis would explain the delusions of persecution, jealousy, erotomania, and grandeur seen in paranoia. Alcohol tended to destroy sublimation and aid regression, and thus might set free early trends, of which homosexuality was found to be a common one. He concluded with an appeal for a careful and unprejudiced study of Freud's contentions, which had been arrived at by long research and observation.

*Sadism and Masochism.*

Dr. REES-THOMAS read a contribution on this subject. He said that in sadism was included everything from an impetuous attitude towards the sexual object to the stage in which sexual gratification ultimately depended upon the complete subjugation and ill-treatment of the sexual victim. Masochism, on the other hand, ranged from mere subjugation to the sexual object to the suffering of physical or mental pain as a condition of sexual pleasure. This paper treated of these in their broad meaning. Bloch referred to these conditions as affecting mankind in the mass, as shown by gladiatorial combats, revolutions, marriage by capture, cannibalism, &c. He spoke of the relationship of muscular exertion to sexual excitement, and of intensity of feeling causing an overflow to other impulses, and thought this might be a factor in the later formation of sadistic impulses. He quoted illuminating instances, from his own experience, of the truth of Freud's contentions. He contended that the step from the psychic state of the normal lover to that of the sadist was but a short one. Usually sadism and masochism were found side by side in the same individual. Active and passive cruelty must be recognised as almost universal, and it acted, in greater or less degree, in influencing and colouring the sexual abnormalities and psychoses.

*Psychoanalysis and the Psychoses.*

Dr. H. G. BAYNES (Zurich) sent a contribution with this title, which was read by Dr. BEDFORD PIERCE. The author said that in dementia præcox there was a certain toxic element, but the "complex" was the principal causative factor, and many psychotic cases had been cured by analysis. Professor Jung had told him of cure of cases seven years ago by this method, and there had been no relapse in the meantime. The right attitude to take in respect to these conditions was, "Is this condition due to some trauma or lesion producing a secondary disturbance, or is it a disturbance of function producing corresponding changes of anatomical structure?" This brought the greater responsibility of inquiring as to what was the primary cause of the disturbance in function; it brought one into contact with the individual moral problem. Clinical medicine could not be an exact science because it assumed man to be a constant factor. He referred to the derisive condemnation with which the medical world had treated the attempts of Freud and Jung to examine psychical disorders from the subjective and individual standpoint. He pointed out the respects in which Jung was unable to accompany Freud all the way, and quoted that authority's explanation of the unwillingness of the patient to forsake the pleasant world of his phantasy for the actual world of experience. The subjective comprehension of the psychotic state entailed upon the analyst a constant exercise of deep and sympathetic accord instead of that of the detached observer, so that he was able to enter the patient's unreal world with him. There was no essential difference between the phantasy-world of the insane and the dream-world of the normal person.

*Criticism of Present-day Psychoanalysis.*

Dr. WILLIAM BROWN contributed some criticisms of present-day psychoanalysis. He agreed there was in the profession a widespread lack of understanding of psychoanalysis, and this was well exemplified in the recent Cambridge meeting of the British Medical Association. Remarks were there made concerning it which those who understood the process knew to be both untrue and unfair. Since 1912 he had endeavoured to test the various facts and theories which Freud and Jung had put forward. He had tried to analyse his own dreams, and had submitted himself to analysis, and he had been surprised at the way in which unconscious trends of thought sprang to the surface. He did not agree with Freud that everyone found life tremendously hard; a healthy man with a clean ancestry did not find it so. He agreed with Hughlings Jackson that the more one studied one's dreams the better would one understand psychology; but that did not mean that the normal waking life must be regarded as an outgrowth, a something superposed upon dreamlike activities. As early as 1892 Freud showed that when certain hysterical patients brought up lost memories an emotion was aroused which, having been worked off, left the patient much better; it was termed the method of "abreaction." Two groups of hysteria were determined on: retention hysteria and defence hysteria. Bryer, who went far with Freud, parted company from him on the degree to which he drew upon sex as a causative factor in these conditions, and it was at this parting that psychoanalysis was born. He gave some experiences in the cure of loss of memory and other mental symptoms by analysis during the war. Complete cure was brought about by abreaction and psychocatharsis. An important matter was giving the patient an opportunity of working off the emotion of fear which he had not the opportunity of doing while he was in the line, where soldiers were more or less in a state of stupor. Freud stated that emotions could not be remembered, but Dr. Brown could not agree with that. He quoted cases in which obviously childish emotions were lived over again in military patients. The chief difference between Freud and Bryer was on the libido content: Freud's view was getting nearer and nearer to the physical, while Bryer's was emotional. He (the speaker) thought psychoanalysis should be carried out as far as possible and as fully as possible. He believed that even in psychoanalysis where the examiner refrained from leading the patient on by his own remarks, the influence of suggestion, though unconscious, was present and potent. Sex tendencies, sadism, masochism were present in some cases, but he (the speaker) denied them anything like the universality claimed by Freud's disciples.

*Discussion.*

Sir ROBERT ARMSTRONG-JONES declared his belief that Freudism was dead in England to-day. When that system first came to light he regarded it as probably applicable to life on the Austrian and German frontiers, but not to virile, sport-loving, open-air people like the British. Psychoanalysis was thought to be a splendid thing because it brought baser desires to the surface and enabled them to be discussed; but he reminded the meeting that all the courtesies and conventions of decent society were founded on intelligent repression. These restraints were rather ridiculed by the new psychiatrists. He believed suggestion played a large part in psychoanalysis. The method was claimed as the thing for the educationalist, for spiritual development, for social welfare and social regeneration; he was astounded at the variety of the claims, which had not yet been substantiated. He proceeded to discuss the regional anatomy of the brain, the use of terms, and the mechanism of psychic determinism.

Professor GEORGE ROBERTSON, speaking as an asylum physician, insisted on the great distinction between a true, manifest psychosis and a psychoneurosis, though the two might coalesce in the same person. The importance arose as to the applicability of psychoanalysis, for to psychoneuroses psychotherapeutic treatment—such as psychoanalysis—was very suitable, while it was not at all beneficial to true psychoses, the subject of which could not be convinced that he had an abnormal mind; he regarded such an idea as nonsense. Professor Robertson also emphasised the fact that these early cases of psychoneurosis were not early cases of insanity, and did not tend to pass into insanity. He went on to discuss toxæmias and dream-states, and in regard to Freudism said that anyone who studied Freud on dreams and tried to analyse his own dream-states could not fail to be convinced of the truth of

Freud's contentions. He referred to a number of very instructive cases in support of his views.

Dr. BEDFORD PIERCE dwelt upon the view that because a thought or tendency was repressed it was bound to appear in some other way in the person; he thought the mistake made was in regarding them necessarily as realities, as comparable to water, which if pushed out of one place would come up in another. He did not think mental processes should be so considered; why should they not rather be considered as mental gunpowder? Gunpowder could remain unexploded for all time.

Dr. F. H. EDWARDS suggested that some synthetic process must follow the analytical, and asked why dreams were always symbolic. He did not believe early emotions could be revived, but only the memory of them, sometimes with a resumption of childish speech.

Dr. R. G. M. LADELL agreed that on first becoming acquainted with Freudism it seemed repulsive, but on proceeding to study it and on submitting oneself to analysis one was forced to the conclusion that Freud was justified in his contention that these tendencies did exist. Children were admittedly innocent, and that was the reason they were "indecent"; the indecencies of childhood were natural. Hypnotism was helpful in many cases of neurosis, but in others it was necessary to proceed much further and do psychoanalysis. He preferred to treat each case on its individual merits. He had been dealing with war cases in a pensions hospital, and some cases could be dealt with by clearing up the amnesia for the war period, or by suggestion in either the hypnotic or the waking state. But there persisted afterwards a state which did not justify turning the man loose upon the world to earn his living.

Dr. E. S. PASMORE did not think cases of dementia præcox were cured, and he referred to Sir Frederick Mott's contribution at the Cambridge meeting of the British Medical Association, in which he set out his pathological findings in 30 cases of dementia præcox, showing that the brain and body generally were badly developed. Cases alleged to be cured by psychoanalysts could not have been dementia præcox.

Dr. HELEN BOYLE (Brighton) said the great difficulty was that those most interested in the psychoses did not see cases until they were far advanced. The type of patients she had were those not sufficiently bad to be certified, but requiring treatment. They were mostly cases of psychoneuroses, with a fair sprinkling of cases of psychoses. It must not be forgotten that nearly every disease represented Nature's effort to cure something which did not harmonise with surroundings. Those who rushed in to cure mental diseases might conceivably make them worse; that had been the case repeatedly with physical disease.

The PRESIDENT read a letter from Professor Friedlander (Freiburg) in which he said that Freud was the father of pan-sexualism, and gave the names of many authorities in America and on the continent who rejected it. He contended that Freud's doctrines stood and fell with his interpretations of dreams, and that his proofs were not scientific and convincing. He felt it was wrong to attribute to every neurosis a sexual cause.

The PRESIDENT said it was the glory of the Claybury school that they showed the mechanical basis of all these higher associations, led by Mott, J. S. Bolton, and G. A. Watson, who proved that the supragranular layers of the cortex gradually developed from the earlier undifferentiated infragranular layers. He, the speaker, had tried to show they were mainly the places in which the instincts and ancestral memories were stored. In old persons, in whom, as Mott showed, the lipoids of the testicle were greatly diminished, there was a corresponding want of association, a fading away of the newer associations, and a retrograde return to the dominance of the infragranular layers. Why should so-called sexual exhibitionism be called bestial? It was the judgment of the associational layers of the cortex which had introduced that idea of indecency. It was necessary to throw oneself back into the innocent condition of the child before one could properly discuss these matters.

# Reviews and Notices of Books.

## VENEREAL DISEASES.

Their Clinical Aspect and Treatment. By J. E. R. MCDONAGH, F.R.C.S. London: William Heinemann. 1920. With an Atlas of 106 colour and 21 half-tone illustrations. Pp. 419. £3 3*s*. net.

THIS book is full of interesting observations collected from a vast amount of clinical material. Throughout the work the author emphasises the importance of careful clinical observation as opposed to pathological examination. Not only can a syphilitic chancre be distinguished from a non-syphilitic one by clinical examination, but some idea of the probable course of the disease may be gleaned from the appearance of a syphilitic chancre. Mr. McDonagh admits that such a laboratory investigation as the examination of a lesion for spirochætes is of value. It is, however, a subsidiary means of diagnosis, and must always be regarded as of secondary importance to the clinical examination.

The author shows a similar suspicion of laboratory methods in deciding when a patient is free from gonorrhœa. He is of the opinion that an elaborate search for gonococci in the urethra or prostate of the candidate for marriage is useless.

"In revising this chapter, after four years, I am even more emphatic on the point that a pathological report is practically useless, and that a clinical opinion is the only reliable means upon which to base an advice on marriage."

The clinical tests for fitness to marry consist of a careful overhauling of the urethra and prostate, with special attention directed to dilatability of the former. If dilatability by means of a Kollman is below normal "the chances are that there are gonococci hidden in the follicles or in the subepithelial tissue." Dilatation will probably wake them up, and a big injection of a potent non-sensitised vaccine will also help to do this. If the dilatability is normal, and if a vaccine does not alter the status quo, the patient may be passed as a fit candidate for marriage. However, it is in the section of the book devoted to the subject of syphilis that the chief interest lies. Mr. McDonagh's views concerning the pathology of syphilis are already well known. In the work under review the clinical rather than the pathological aspect of the subject is considered, although the author does not lose the opportunity of bringing forward points in favour of a cycle in the life-history of the organism of syphilis.

Chapter XI. is devoted to the subject of syphilis of the nervous system. To such an extent is neurosyphilis on the increase that Mr. McDonagh believes that the day will arrive when syphilis will be considered, broadly speaking, a disease of the central nervous system. The best method of combating this increase is, of course, the earlier diagnosis and prompter treatment of the primary lesion. When syphilis has become generalised more prolonged treatment is required than is commonly employed. More attention should be paid to the intermittent treatment and less to the attainment of a negative Wassermann. Finally, in the author's opinion intramuscular injections of intramine are of great service in this connexion.

"Much nervous syphilis can be prevented by the routine use of intramine, which prevents arsenic and mercury from exercising a toxic influence on nerve tissue, thereby rendering it a locus minoris resistentiæ for the syphilitic organism. This is proved by the fact that I have seen only one neuro-recurrence occur in cases so treated since 1915."

Although the author has intended to confine himself to the clinical aspect of his subject he cannot resist the temptation to indulge in speculation on the pathology of disease and the action of the therapeutic agents employed in its treatment. It is here that the weakness of the work lies, Mr. McDonagh has imagination, a gift that is as valuable to the scientific as it is to other kinds of writers. But the scientific writer with imagination must ever keep in mind the foundation on which he builds. Upon a given base a certain amount of superstructure may be erected. However plausible the theory, the fact that it is a theory must never be lost sight of. Mr. McDonagh is generally ingenious, but he

is frequently unconvincing. He builds on precarious foundations. He is frequently illogical.

The book is beautifully and lavishly illustrated. The coloured plates are, indeed, exceptionally good. Whilst Mr. McDonagh's work is full of points upon which a hostile critic might dispute, it is full of interest. Amongst the colourless works on venereal disease which are appearing almost weekly, it stands out conspicuous for its originality. Many will strongly disagree with the views it contains, but few will deny that it is suggestive and stimulating.

### ESSENTIALS OF TROPICAL MEDICINE.

By WALTER E. MASTERS, M.D.; M.R.C.S., L.R.C.P. London: John Bale, Sons, and Danielsson, Ltd. 1920. With index. Pp. 702. £2 2s.

THE preface says that this work contains nothing new, and is not intended to act as substitute for any other work. Its aim is to furnish a digest of tropical medicine in a form handy for ready reference—a vade-mecum, in short, for the student and busy general practitioner. That there is a use for such a work is evident, if we consider how tropical medicine has expanded and how much zoology is now included under the term. As a result the standard books have become somewhat bulky and unwieldy, and the necessity of a digest of them is rendered real, especially for those who cannot follow new papers in the different journals. Dr. Masters attempts this ideal and has succeeded, on the whole, very well, although the book, with its appendices and index, runs to 702 pages. A book of "Essentials" should be free from error, but this is unfortunately not quite the case here. On p. 42 the statement is made that amœbic dysentery frequently attacks the small intestine, while of bacillary it is said that it is nearly always confined to the large, whereas it is just the other way about, and such a statement may lead to grave misunderstanding or even to a student failing in an examination. Again, on p. 29 no mention is made of *S. mansoni* dysentery nor of heterophyes enteritis. But these are points which can be remedied in a subsequent edition. The book contains valuable information and will serve a useful purpose.

### LE CŒUR ET L'AORTE.

Études de Radiologie Clinique. Troisième edition. By H. VAQUEZ and E. BORDET. Paris: J. B. Baillière et Fils. 1920. Pp. 259. Fr.20.

THE third edition of this well-known monograph contains a good deal of new matter. The early chapters contain an excellent description of technique. The authors are well known for their warm advocacy of the orthodiagraphic method. Using this as a routine plan, they have arrived at a multitude of diagnostic conclusions, of which this general criticism may be offered, that their clinical judgments do not seem to have been adequately checked by post-mortem data. To those for whom skiagraphy of the heart and aorta means no more than a search for aneurysms, it will be instructive to remark that less than one-twelfth part of the book concerns itself with the aneurysmal shadow. The interesting chapter on pericardial lesions includes no remark on the skiagraphic appearances of pneumo-pericardium, but we have noted no other serious omission. The book is the handiwork of two enthusiasts, and gives the fullest account of the subject yet published.

### OPHTHALMOLOGY.

For Students and Practitioners. By A. BRÜCKNER and W. MEISNER. Leipsic: G. Thieme. 1920. With 126 figures and 1 coloured plate. Pp. 650.

THIS is a business-like and efficient account of the subject written by two chief assistants of Professor Kruckmann of Berlin. The whole subject is covered, and though the illustrations are limited in number on account of expense, they appear to be well chosen and clear. The authors express the fear that many students in Germany will not be able to afford to purchase one of the larger works, and offer this one as containing all the essential matter to be found in them, while omitting what is non-essential. On the whole, they have performed their task well. Here and there they are not quite up-to-date. Donders's chart of the relation between age and presbyopia has been shown to give more nearly the minimum than the average accommodation at different ages. Again, senile macular degeneration is well described, but there is no mention of the similar condition which is sometimes found in early life in more than one member of the same family, and may be associated with mental defect.

### THE MENTAL HYGIENE OF CHILDHOOD.

By Dr. WM. WHITE. London: Heinemann and Co. 1919. Pp. 194. 6s.

THIS is a careful psychological analysis of the development of the child mind from infancy to adolescence, written primarily for parents and teachers. It is distinctly Freudian, and the parent must not become alarmed when he reads that much of the infant's activities, such, for instance, as his unconcern at showing himself naked, are of a sexual character; he will find statements much more startling as he proceeds. Dr. White, to a large extent, discounts heredity as a factor, maintaining that the child's environment during the first five years of life is of much greater importance in the formation of character and tendencies, and many will agree with him. He maintains that hereditary tendencies may be modified, or diverted into other channels when the child is young. He is convinced that our present educational methods tend to sacrifice the individual to the formal scheme. There is an interesting chapter on the function of parents, and the book will undoubtedly be widely read in the American home.

## JOURNALS.

*British Journal of Tuberculosis.*—The July number contains a generous tribute to the life and work of Sir William Osler by Dr. S. Adolphus Knopf.—Dr. H. Batty Shaw, dealing with the distinction between pure pulmonary tuberculosis and the compound disease known as consumption, stresses the importance of secondary infections, and suggests that if these can be eliminated the course of pure pulmonary disease would be fibrotic and benign.—Dr. John Craig-MacGown writes about muscular changes in pulmonary tuberculosis, and Dr. W. Gordon shows how his studies in the relation of rain-bearing winds to pulmonary tuberculosis are illuminated and corroborated by Dr. Brownlee's researches into the epidemiology of phthisis.—Dr. W. Muir discusses the value of v. Pirquet's test, and Dr. E. Gladstone Davies gives an account of the tuberculosis campaign of the American Red Cross in France.

*American Review of Tuberculosis.* Baltimore: National Association for the Study and Prevention of Tuberculosis. 50 cents.—The June number begins with a paper by Dr. Arthur L. Bloomfield, in which he describes certain experiments dealing with the growth of bacteria in the upper air-passages. He finds these passages unfavourable to the growth of various bacteria, and he suggests that some preliminary injury may possibly be essential to the initiation of such diseases as pneumonia and tuberculosis. Discussing 24 years' experience with the subcutaneous tuberculin test, Dr. Lawrason Brown and Dr. Fred H. Heise note that this test has gradually fallen into disuse. One of the authors has had two or three severe reactions (104°) to tuberculin, a spray of which was inhaled. They used Koch's old tuberculin (O.T.), and are convinced that, if the test is carried out carefully "..... the evidence is overwhelmingly in favour of no permanent harm being done. ....." Their material consists of 324 patients, 42 of whom failed to react to a second dose of 0·01 c.cm. O.T. (10 mg.). It is interesting to note that none of these 42 is known to have died of pulmonary tuberculosis. The authors confirm the current view that the significance of a negative test is much greater than that of a positive test. Dr. Martin F. Sloan contributes to the already prodigious output of papers concerned with the relation of influenza to pulmonary tuberculosis. He refers to 29 representative and widely scattered sanatoriums which admitted 7871 patients, 15 per cent. of whom traced the onset of tuberculosis to an attack of influenza. Dr. H. J. Corper and Dr. H. Gauss describe experiments showing that the effect of heat and venesection on tuberculous guinea-pigs is negligible.—In a paper on Work for the Tuberculous, Dr. David A. Stewart discusses, with considerable impartiality, the burning question of colonies, and he diplomatically remarks that what may be very suitable in England may be "entirely unworkable" in Western Canada.—The final paper, on the Influence of Climate on Pulmonary Tuberculosis, by Dr. John W. Flinn, adds nothing new to a very old problem.

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# THE LANCET.

*LONDON: SATURDAY, AUGUST 21, 1920.*


## Hysteria as Purposive Inattention.

IN his Croonian lectures delivered before the Royal College of Physicians of London, and published in recent issues of THE LANCET, Dr. ARTHUR F. HURST, through whose hands at the Seale Hayne Hospital there passed during the later years of the war an immense number of functional cases of all sorts and conditions, has outlined in some detail his views on the essential nature of hysteria, citing in support many examples of hysterical disorder which have yielded to his treatment. The lectures deal mainly with hysterical disturbances of the special senses and of cutaneous sensibility, although much else of interest therewith is incidentally touched on. Dr. HURST is apparently an adherent of the pithiatic school of BABINSKI, whom he follows in asserting that "hysteria is a condition in which symptoms are present which have resulted from suggestion and are curable by psychotherapy." At the same time he avoids the difficulties inevitably encountered in any too rigid limitation of this criterion by accepting and, for that matter, corroborating and extending by exact observations of his own, the view that hysteria may and can alter cutaneous, vasomotor, and other reflexes; his explanation of the production of such departures from the normal, however, has little to do with any action of suggestion in the strict sense of the word. Dr. HURST is of those who reject altogether the specificity of hysteria as a morbid entity; if the suggestion is powerful enough "there are probably no individuals who would not develop hysterical symptoms"; abnormal suggestibility is a predisposing but not an essential factor. By this simplification the vexed questions of what constitutes abnormal suggestibility, what is the state of mind allowing it, which suggestions are responded to and which repelled, whether those accepted have significance in connexion with the previous experiences and unconscious desires of the individual concerned—such questions of psychological import are ignored. Anyone will develop hysteria if the provocation is sufficiently great; otherwise expressed, the hysterical mind has no characteristics distinguishing it from the normal mind.

Although, as far as we have noticed, Dr. HURST does not actually so express himself, it might seem that this view brings his position to some extent into line with the conception frequently expounded of recent years, that hysteria and the psychoneuroses generally are to be regarded as modes of reaction of the organism to its environment, a biological conception no less applicable in the psychical than in the physical sphere. Now if this hypothesis be adopted, it is clear that differences in the psychoneuroses can be only explained either by differences in the individual organisms or in the stimuli brought to bear on them. If we are all potential hysterics in the face of sufficient provocation, then groups of fighting men —to take an illustration from the material mainly utilised by Dr. HURST—undergoing precisely the same powerful and simultaneously acting stimuli should all have developed hysteria if any one did, a view, needless to say, at variance with known facts. Moreover, not a few men "broke down" within 24 hours' experience of the firing-line, and others before they ever crossed the Channel. Evidently the excitants in such cases were of minor intensity in comparison with what others were at first able successfully to resist, and the conclusion is, indeed, unavoidable that hysteria is in reality a pathological state appearing in certain individuals only who fail to withstand the provocation of their environment because of some inherent or acquired psychical defect. It becomes a matter of surpassing importance to endeavour to determine wherein the imperfect reaction takes its rise, and why suggestion acts in some cases and not in others; and any analysis of the psychological material at his disposal would have enhanced the value of Dr. HURST'S contribution to one of the serious problems of the time.

The major part of the lectures is occupied with a consideration of the mechanism of production of hysterical symptoms, not in the sense of the effect of emotional conflict and tension and its exteriorisation in symptoms, for little or nothing is said of this view of their pathogenesis, but rather along the familiar lines laid down by JANET, that hysteria is a form of amnesia or "absent-mindedness." Dr. HURST adopts eclectically what the French professor admirably demonstrated long ago, that the hysteric does not "attend"; he looks obliquely or askance at things; certain elementary phenomena, sensations and images, cease to be perceived and appear suppressed; there is a lack of psychical synthesis. The student of hysteria knows well the importance of JANET'S work in the development of our modern conceptions of the subject, and he realises the significance of the latter's emphasis on the remarkable fact that the anæsthesia and amnesia of the hysteric are often systematised; in other words, the patient is anæsthetic and amnesic for certain stimuli only, or at certain times only, or in certain circumstances. It was left to the genius of FREUD to make the conception far more complete by his study of the question *why* certain systems of ideas should split off from personal consciousness and *why* the hysteric should cease to attend to certain excitations. With these psychological matters Dr. HURST is not concerned; but, assigning a causative rôle to the inattention, which is a symptom, he makes the speculation that "the structural basis of the psychological act of attention consists in some change which leads to a diminution in the resistance offered at each synapse of the sensory tract." The hysterical patient is deaf because he does not attend to sounds, and because he does not attend he does not hear, the suggestion being that inattention consists physiologically in a "throwing out of dendrites, or in some biochemical change in the material which occupies the space between the dendritic terminations of adjacent neurones." It should be remarked that Dr. HURST uses the term attention in a sense which makes it difficult to distinguish from a mere physiological process; "this active attention is as little a conscious process as the performance of the individual movements in walking." Apart from the essentially speculative basis of any theory

of dendritic action, and from the fact that the inattention itself requires to be explained, it must be pointed out that the difficulty in this view of the production of hysterical phenomena is its failure to account for the systematised nature of many hysterical symptoms. We know that the hysterically blind, or deaf, or anæsthetic do, in fact, see, and hear, and feel, as can often enough be readily demonstrated; certain stimuli are perceived, but others do not appear to be, and analysis will reveal an actual psychological explanation of this condition of purposive inattention. There can scarcely be a physiological impairment in peripheral synaptic action when stimuli are, in fact, perceived, though some are not apperceived; and it seems immaterial to seek a physiological theory of dendritic oscillation for acceptance or inhibition of sensations when the clue can be readily found in the psychological sphere.

Discussion of this matter, none the less, has a wider bearing than might appear. If we suppose some of the somatic and visceral phenomena of hysteria to be the outward expression of disintegrative action of neuronal systems, as nervous health is of an integrative action—a view which has been suggested by OPPENHEIM, BINSWANGER, and others—we may ask to what level temporary functional disintegration can on occasion extend; and much of Dr. HURST'S investigation of somatic symptoms can be profitably utilised in consideration of the question. He has adduced evidence which goes to show that the function of mesencephalo-spinal reflex arcs can be put in abeyance in the course of hysteria, indicating that the neuronal disintegration may extend far below transcortical paths if the condition is profound enough. The psychologist may ignore the neuraxis and its function when he has found the cause of a patient's hysteria in an emotional conflict, but the neurologist is legitimately interested in explaining the absence of the plantar reflexes, or even, if Dr. HURST'S statement be accepted, of the pupillary reflex to light.

## Medicine and Aeronautics.

THE practical part to be played by medicine in the development of aeronautics was more than suggested at the recent Aeronautical Exhibition, where a gallery was set apart for the use of the Air Ministry. The Medical Section was divided into three subsections. In the first were demonstrated the apparatus and material which medical officers had helped to design for the general welfare of the pilot. In the second subsection the apparatus used by medical officers during their researches into the question of physical efficiency and flying ability were set out; while in the third a model room as used for the examination of the civil pilot of to-day was shown. These several subsections demonstrated not only the influence of medical research directed towards aeronautics in other and general medical fields, but they also proved the advantages and possibilities of team-work between those engaged in progressive medical work and men of science working upon other lines or specialising in other professions. The exhibition as a whole, with its promise of rapid future transport, conveyed the uncomfortable message that the spread of communicable diseases might be considerably accelerated, and this is a matter which will require watching, but is not under discussion here.

The influence on general medicine of work in the first instance devised for aeronautic purposes was well exemplified by an exhibit of the apparatus employed for the administration of oxygen to flying men. One type of this apparatus, which was shown in its various stages of development and design, as well as in its perfected form, has since become the standard apparatus for use in many of our hospitals. Now that it has been seen and tried, it becomes surprising that the unscientific and wasteful method of giving oxygen to patients by means of a glass funnel attached to an oxygen cylinder, without any graduated regulating tap or proper reduction valve, was not abolished long ago in favour of proper regulating appliances and a suitable mask. So the need of the airman has benefited the whole of practical surgery, and suitable types of oxygen apparatus can now be purchased for use at the bedside, in which the actual quantity of gas supplied per minute to a face-mask worn by the patient can be accurately gauged. Another piece of apparatus shown in the Medical Section may also eventually prove to be of value for other than air medical problems. This is the gas-mixing apparatus designed by Professor GEORGES DREYER in collaboration with Mr. G. F. HANSON, an American worker on problems of physical efficiency. This apparatus is primarily designed to estimate the ability of individuals to withstand great altitudes by the gradual addition of nitrogen to the air breathed, thus reducing the percentage of oxygen. It is so constructed that it can supply any two gases, or any two liquids, in constant volume in any proportion required, accurately and steadily. The adaptation of this principle to the administration of anæsthetics should prove useful—here is a line along which our anæsthetists might work; while in trades where liquids or gases have to be mixed in definite proportions its scope of utility is obvious. It has, for instance, been shown that it is possible to maintain the exact proportions of air and petrol vapour required for the most efficient explosion, so that neither waste nor starvation need occur. With petrol at its present price the economy that should result is not negligible. In the direction of clothing and personal equipment, practical lessons have also been learned from the medicine of the air which can be applied to the medicine of the home or the institution. Electrically heated clothing, special goggles, safety belts and helmets, have been devised, and the practical use is thus demonstrated to which physiology and anatomy can be put when applied in close collaboration with non-medical experts. The extension of this field of coöperation is bound to bring good results, for in this way the medical man is brought into closer and more personal touch with working conditions, while trained and scientific technicians will have a better chance of placing a knowledge of psychology at the disposal of industry.

We trust that many of our readers saw the exhibition of a model room as arranged for the examination of pilots; it contained within its walls a summary of much that was instructive and interesting in regard to many difficult questions of physical efficiency. The examination of pilots has now become a question of distinguishing differences among those who would always be passed as first-class lives by an insurance office. It has been found that only those who can meet satisfactorily the necessary tests of insurance examination can withstand the stress of air work, and it has been assumed that this class can resist

infection generally better than others. But the strain of air work must be looked upon as a concentration of the strains of ordinary life, and first-class lives among non-flying individuals, though falling into the highest categories of physical efficiency are not asked to bear this concentration, apart from the question of special risk. It is not, in a scientifically ideal condition of things, sufficient for the airman to be what is called by the insurance office a first-class life; we must try to subdivide the first-class lives and to ascertain which of the individuals possessing this happy standard can satisfy the accurate application and interpretation of the special tests elaborated for the selection of pilots. Just as the object of all modern medicine is to ascertain the symptoms of disease in its earliest stages, so the examination of pilots attempts to ascertain not only the proofs of physical stamina but the earliest signs of impending physical inefficiency. With what measure of success can be gauged by the pre-eminence of our pilots in the war. It is largely due to the special work of Wing Commander MARTIN FLACK and Professor DREYER that it is now possible to estimate, and record accurately, minor signs of physical inefficiency long before gross lesions make their appearance. Progress on the road towards the absolute measurement of physical fitness may be said to have commenced satisfactorily, and here again the medicine of the air may be vitalising the medicine of civil life. The practical utilisation of the tests devised for air men by insurance companies should become a matter of importance, as it is clear that if by means of a few simple measurements individuals can be graded within the general category of those physically efficient, we have a means of reducing the premiums asked in the case of those falling within the higher categories. Medical examiners may be able to "sense" disease before it makes its appearance, the measurements employed being in their turn direct inducements to the maintenance of physical health among the candidates for insurance. Insurance companies often grant a reduced premium to teetotallers, and it should be possible to arrange that insured lives when particularly physically fit should reap similar advantage at the time of insurance, and they might even gain further advantages of reduction of premiums if they were prepared to submit themselves to special tests of this nature from time to time. Work is being constantly carried out by the medical department of the air force in the endeavour to add new methods of accurately measuring the degree of efficiency of the various systems. The possibility of utilising such special war work as air medical work for the general benefit of industry and preventive medicine must never be forgotten.

## Your Telephone Number.

WHEN is an advertisement not an advertisement? Medical men resident within the London telephone exchange system have during the past week received a circular letter from a business firm detailing an agreement made with the Postmaster-General which has a bearing upon their convenience, although they have not been consulted. This agreement is to supply free of cost to every London telephone subscriber a copy of a classified directory of trades and professions, including the profession of medicine. Four specimens of the type to be used for this supplement are given in the circular; these increase in magnificence from ordinary brevier to bold pica, the cost of the insertion varying in accordance therewith from one to four guineas. No indication is afforded to the medical man of the appropriateness of the type which he should select. In the examples given members of the London Stock Exchange are suggested as requiring a one-guinea insertion, solicitors a two-guinea, printers a three-guinea, and engineers a four-guinea insertion. The naïve note is appended that professional entries in this publication are not advertisements. Whether they are advertisements or not may well be left to the decision of a less interested tribunal, but it is difficult to see what the inserter is asked to pay guineas for if it is not to make himself better known. In the meantime, we should like to know to what extent classification is being carried out, and whether doctors are to be scheduled in this publication under specialist subheadings. This, at all events, the medical profession is entitled to have some say in. In any case, we fear that a list issued along with an official postal document may convey the impression to unwary telephone subscribers that only the names included in the directory are those of authorised medical practitioners. If the classified directory is to contain medical names at all it is in fact putting pressure on doctors to advertise in it (we use the word advisedly) at one to four guineas a head. As far as medical men are concerned the telephone directory as it stands serves its purpose quite well, which is simply to enable the patient to communicate with his doctor. And what more is wanted? The Medical Directory provides a reference book of professional attainment such as is held to be proper and convenient by the medical profession as a whole. We hope that London medical men will not waste a guinea on what may put them in rather an invidious position.

## The Proposed International Health Office of the League of Nations.

IN our issue of April 24th last we referred somewhat fully to the proposals made by the International Conference of Public Health Experts, held at the Ministry of Health in London in April, at the request of the League of Nations, to advise on the steps which should be taken to provide the League with a suitable organisation for dealing with international health questions. The London conference, it will be remembered, made a series of detailed recommendations regarding the functions and duties of the proposed organisation, the incorporation within it of the existing Office International d'Hygiène Publique established under the Rome Convention of 1907, and the nature of the permanent machinery which the new International Health Office would require. An important further step in this direction was announced at the conclusion of the recent meeting of the Council of the League of Nations at San Sebastian. The Council have now adopted the scheme prepared in London, with a few minor amendments, and have unanimously recommended it for formal adoption by all the nations in the League at the General Assembly which will be held in Geneva in November.

# Annotations.

"Ne quid nimis."

## THE POSITION OF THE MEDICAL PROFESSION IN VIENNA.

THE special article on Economic Conditions in Vienna, which appears in another part of this issue, pictures the fate of the middle-class in general. The medical profession is involved in the common ruin. The doctor's expenses have risen quite out of proportion to the fees which it is possible for him to charge. The maximum consulting fee in Vienna at the present time is 100 kr., with a purchasing value, expressed in English money, of about 3*s*. 2*d*. With so many members of their own social class in dire poverty, not a few Viennese doctors are doing their professional work for nothing. But the cost of drugs and medical appliances has, of course, risen just like other things. Those who are intimately acquainted with the work of the medical profession in Vienna testify that it has been maintained as yet at a very high standard. All that the doctors can do they have done. In spite of low salaries, public health work in all its branches, the prevention of epidemics, and the care of infant life are first-rate. As a matter of fact, the infant mortality did not rise in spite of the terribly high general death-rate, a result which may fairly be ascribed largely to the organisation of infant welfare centres, rapidly extended during the war in the face of economic difficulties. The campaign against tuberculosis has gone steadily forward in the dispensaries, sadly hampered, it is true, by the impossibility of increasing sanatorium accommodation; and although the widespread malnutrition has made some increase in the tuberculosis mortality inevitable—the rate has increased from 30 to 58 per 10,000—it is a surprise to those who best know the local conditions that this increase is not still greater. Here the result is much to the credit of the tuberculosis dispensary staff.

Medical practitioners in more fortunate circumstances might stop to think what it means to colleagues, who know the possibilities of modern medicine and who are accustomed to give their patients the benefit of recent discoveries, to be forced to return to the weapons of previous generations—often, indeed, without even their modest equipment. The restriction of anæsthetics and of dressings for operations, and the total lack of clean linen for the patients make appeal to the non-medical mind, and relief funds have been available to some extent to remedy the needs, but doctors alone can realise what it is to do without important drugs, the essential parts of X ray and other complicated apparatus, stains for bacteriological work, animals for inoculation and serum preparations, and a thousand other things to which a committee, charged with the care of half-starved children, can hardly apply their scanty funds. English and American doctors now helping in Vienna see how painful is the lot of their colleagues obliged deliberately to lower the standard of their work in a city of magnificent institutions with appliances out of order for want of some comparative trifle. Nor is it less hard to see patients die for want of treatment which a little money could get them, even if it be remembered that 50 years ago there would have been no alternative to death. Isolation from scientific workers in other countries is also keenly felt by the medical profession in Vienna. They cannot afford to buy books or medical papers from other countries, and still less can they afford, even should passport facilities be available, to travel abroad. Medical visitors are warmly welcomed in Vienna that they may apply their experiences of work done in England during the war period.

Individual help given to a starving city may seem like a drop in a bucket, but there is no reason to doubt that an organised scheme on the part of the medical profession at home to help their Vienna colleagues would meet with tangible results. A beginning has already been made through an influential University Relief Committee and through special committees for practitioners not connected with the University. The Friends' Relief Mission now working in Vienna, of which Dr. Hilda Clark is organising secretary, can arrange for any help that is forthcoming to be given to the medical school, both staff and students, or to doctors in general practice. Clothing is especially needed, and those who have no money to spare can give old garments, which the Viennese are clever at re-making. Gifts in kind meet with ready acceptance.

## DR. MARCEL BLOCH ON COAGULATION.

IN the course of an article which appeared in our French Supplement on August 7th Dr. Marcel Bloch dealt with the measurement of the coagulability of the blood and with the clinical conditions under which the blood coagulates less readily, putting forward in so doing a new and interesting view of the relation of calcium to coagulation. It has long been known that, in order to bring about the formation of thrombin, calcium must be present in ionic form, and that citrates render blood incoagulable by uniting with calcium to form a non-ionised, though still dissolved, compound. Dr. Bloch suggests that in the circulating blood calcium is present in a non-ionised or, as he prefers to call it, an inactive form, and that, when blood is shed, external processes bring about the conversion of inactive to ionised calcium, and so permit coagulation to occur. The external processes include contact with foreign surfaces and the setting free of kinase. If we understand him rightly, Dr. Bloch further believes that delayed or imperfect activation (ionisation) of calcium, when blood is shed, may be responsible for the lessened coagulability of the blood in hæmophilia and other clinical conditions.

Although Dr. Bloch does not himself bring forward any evidence in support of this theory, there is reason to believe that some calcium is present in the blood in combination with protein; and, since such compounds are very slightly ionised, the calcium thus combined would be almost entirely inactive as regards the process of coagulation. But the presence of inorganic calcium salts in the urine points very strongly to the existence of such salts, presumably chloride or phosphate of calcium, in the circulating blood plasma. If this is the case, calcium will undoubtedly be present in its ionic form in the circulating blood. It is clear, therefore, that there are difficulties in the way of accepting Dr. Bloch's suggestion, and that direct investigation of the form in which calcium exists in the circulating blood is desirable in order to substantiate this view.

The surgical interest of Dr. Bloch's paper lies in the bearing which his investigations may have upon the use of sodium citrate in blood transfusion. The clearer our conception is of the precise manner of action of the sodium citrate in preventing coagulation the more satisfactory is the use of citrated blood in hæmorrhage, shock, and blood diseases likely to become. It is at present not entirely so because sodium citrate is undoubtedly toxic, the degree of toxicity varying according to the idiosyncrasy of the patient. It is desirable therefore to use the minimum amount of sodium citrate compatible with its efficient action, and to arrive at this it is necessary to have a precise knowledge of the nature of the reaction that is taking place. It may even be useful to apply Dr. Bloch's method of measuring coagulation indices to the blood of a particular donor in order to determine the precise quantity of anticoagulant that may be necessary to prevent the clotting of his blood; not, of course, in an emergency, but in ordinary therapeutic blood transfusions. It is hampering to the surgeon to lack the means of inactivating the calcium electrolyte in the circulating fluid when this, through some obscure cause, has become abnormally active. Sodium citrate does not have this action in the circulation because it is rapidly destroyed; it has even been stated that injection of sodium citrate into the circulation increases the coagulability of the blood. A patient died recently in St. Bartholomew's Hospital from a pulmonary

embolism, some time after having been admitted for injuries received in a fall from a window. There was a superficial wound on the outer side of the right leg, but this had healed by first intention, and no other injury or septic focus in the limb was discovered post mortem. Nevertheless, its main venous channels were found to be occupied by a blood clot extending from the foot to the common iliac vein. This can only be explained on the hypothesis of an altered coagulability of the blood produced by some unknown factor. The surgeon is in need of an accurate method of measuring coagulability, and Dr. Bloch's work may help him to get it.

## WORKING OUTPUT AGAIN.

LAST week we noticed in an annotation an important contribution by Dr. H. M. Vernon on output in relation to altered hours of work. Those who are accustomed to think of the United States as ahead of us in industrial matters will be astonished to find that a report[1] just published is the first of a series to be issued under Government authority dealing with problems of industrial working capacity. In the States spade-work upon these problems has not been so extensive as might be expected. The present report, however, is a serious contribution to knowledge. It contains data collected, not by the useless questionnaire method, but by investigators, thus enabling the reader to check the conclusions. The information set out was gathered from two engineering factories employed one on an eight-hour day, the other on a ten-hour day. The onset of fatigue is studied from the hourly rise and fall of output in the two plants and from the hourly accident-rate. Labour turnover is compared under the two systems, and the effect of the experimental introduction of rest pauses. An interesting preliminary note upon a study of rhythm in industrial work is also included. The comparison is strongly in favour of the eight-hour system in every case. Unfortunately, the articles produced in the two factories were not similar, and difficulty faced the investigators in establishing a fair comparison. We do not feel confidence that the difficulty has been satisfactorily overcome. Thus, to permit of comparison, processes are grouped after inspection into dexterous handwork, muscular handwork, lathe machine-work, and miscellaneous machine-work; then the curves of output of the groups in the two plants are compared. This method presupposes correct grouping, one of the matters under investigation. A sounder procedure would have been to group the processes together of which the curves of output proved similar and then to examine the processes so grouped to see what common characteristics they possessed. The method adopted smacks of a priori reasoning. Our confidence in the conclusions drawn is especially strained when they are at variance with those drawn by other investigators; further, we may express regret that the work of Dr. Vernon is somewhat unnecessarily attacked. An instance may be given of a conclusion which does not appear to be justified by the data. Comparison is made in the ten-hour plant between the curves representing hourly output and hourly accident-rate. The two are not found to keep parallel; and the steeper rise of the accident-rate while the output is still rising is held to indicate the appearance of diminishing neuro-muscular coördination (claimed to be a sign of incipient fatigue) before output commences to fall. If this conclusion is correct, the definition of fatigue[2] as "the sum of the results of activity which show themselves in a diminished capacity for work" falls to the ground. Therefore this conclusion challenges attention, apart from the fact that Vernon's work is attacked on the strength of its correctness.

The report itself, however, provides evidence—not used for this purpose by the writers—that the curves of output and of accident-rates used are not really comparable, from which it follows that the conclusion is not soundly based. This evidence we will explain. Output increases per worker with length of employment—even in the case of simple repetition processes some four months must elapse before it attains a reasonable level, and in complicated heavy processes some 12 months may be required;[3] therefore, even if the personnel of a plant is evenly distributed according to length of employment, the output curve tends to represent the activity of those with longer employment rather than of those with shorter employment. But at the ten-hour plant 66 per cent. of the personnel had been employed more than six months, from which the conclusion follows that the output curve is mainly representative of the output of this 66 per cent. of the workers and not of the output of the remaining 34 per cent. of newer workers. The probability (which almost amounts to a certainty) is that the curve of output hour by hour of the 34 per cent. of workers with less than six months' experience, who for lack of skill and practice will be especially affected by industrial environment, would be entirely different, and that no deduction as to the activity of this 34 per cent. can be drawn from the general output curves. On the other hand, accidents are definitely stated to have been more prevalent during early weeks and months of employment than during later periods, "the level of the accident-rate varies inversely with the experience of the workers"; 34·7 per cent. of all accidents are stated to have occurred during the first three months of employment, and 13·8 per cent. during the next three months—i.e., 48·5 per cent. of all accidents occurred among the 34 per cent. of workers in their first six months of employment. The accident curve then is composite, and represents about equally the tendency of accidents to occur hour by hour among those employed less than six months, and among those employed over six months, but does not represent accurately the tendency to accidents of either group. Clearly no sound deduction can be based on a comparison of these two curves; much less an attack upon the work of others.

Further, the disparity of the curves of accidents and output was found less striking in the case of the eight-hour plant, and this is ascribed in the report to the presence of less incipient fatigue due to shorter hours. But at the eight-hour plant the proportion of operatives with less than six months' experience may be fairly presumed to have been far less since the labour turnover, 30 per cent. per annum, was nearly six times lower than that, 176 per cent., on the ten-hour plant. Hence on the eight-hour plant the curves of accidents and output more nearly approach to being comparable factors, but whether sufficiently so to base conclusions upon cannot be determined from the data given. Notwithstanding these accidental occurrences, which must often appear when work is embarked upon in an unfamiliar field—they are like the tendency to accidents among those newly employed—we welcome this contribution to the study of the human machine, its activity and health, and look forward to the issue of later publications from the same source.

## CONGRESS OF COMPARATIVE PATHOLOGY.

THE Second International Congress of Comparative Pathology will be held in Rome in April, 1921, under the distinguished presidency of Professor E. Perroncito, late director of the Royal School of Veterinary Medicine at Turin. A preliminary programme has been issued in which the secretary-general of the Congress announces that he is prepared to receive titles and abstracts of papers dealing with comparative pathology of man, animals, and plants, which should reach him before Dec. 15th, 1920. The Congress will be conducted on lines similar to those of the first Congress held in Paris in 1912; the fee for admission will be 40 lire, and arrangements are being made to secure reduced fares by land and sea to its members. Professor G. H. F. Nuttall (Longfield, Madingley-road, Cambridge) has been entrusted with the task of forming a committee

[1] Comparison of an Eight-hour Plant and a Ten-hour Plant. Public Health Bulletin No. 106. 1920. Government Printing Office, Washington. Pp. 213. 25 cents.

[2] Industrial Fatigue and Its Causes. Health of Munition Workers Committee. Memo. No. 7 (Cd. 8213), 1916.

[3] The Speed of Adaptation of Output to Altered Hours of Work. Industrial Fatigue Research Board, Report No. 6, 1920.

in this country to further the work of the Congress, and, pending its formation, will be glad to receive communications and names of intending members. Among the subjects already proposed for discussion are influenza in man and animals, foot-and-mouth disease, cancer, hydrophobia, diseases of cattle, poultry, and bees, various parasitic diseases, and nerve regeneration. Further suggestions will be welcomed if sent to Professor Nuttall or direct to the Secretary-General, Professor Mario Levi Della Vida at 58 Via Palermo, Rome.

## PELLAGRA AT PORT SAID.

INFORMATION goes on accumulating bearing on the ætiology of pellagra in the Near East. In a report recently issued Dr. R. G. White, deputy director of the Public Health Laboratories, Cairo, states that on Sept. 13th and 14th, 1915, there arrived at Port Said 4058 Armenian refugees from the neighbourhood of Antioch in Syria, consisting of the survivors of the inhabitants of five villages after 45 days' fighting with the Turks; they were in a very debilitated condition. The children under 14 numbered 1563. These unfortunates were accommodated in camp on the eastern side of the Suez Canal, occupying the buildings of the quarantine lazaretto and tents pitched on the neighbouring desert ground; the camp was carefully laid out and its sanitation well looked after. The water-supply was derived from the Port Said Water Company and was ample and satisfactory. About the beginning of February, 1916—that is, four and a half months after the arrival of the refugees—stomatitis and diarrhœa began to be prevalent. Two months later a symmetrical rash on the hands was noted in two or three cases. These increased in number, and early in May were recognised to be pellagra. By the middle of June some 400 to 500 of the refugees were showing signs of this affection, the cases being distributed throughout the encampment. The condition was more marked among the older people, and of the 1200 children attending school only 50 showed any symptoms, and these were of a very mild type. It is to be noted that the school children received two small buns daily in addition to the usual ration. There was some improvement in July, but in September the number of cases increased, and there appeared to be an exacerbation of the symptoms. The total cases amounted to 639 in 1916 and 14 in 1917. Of this total (653), 79 per cent. were among females. The age varied between 4 and 95, averaging from 20 to 50 years. The duration averaged five months, and the mortality (38) was at the rate of 5·8 per cent. of the cases. A revised dietary was drawn up in October, 1916, and a special "anti-pellagrous" diet, including fresh foods and milk, was issued in February, 1917, the fatty elements being raised from 46 to 90 g. daily. From this time pellagra began to diminish, and no fresh cases occurred after June, though old cases still appeared from time to time at the out-patient dispensary. Opportunity was afforded in July, 1916, for comparing the condition of these Armenian refugees at Port Said with that of a large number of Jewish refugees at Alexandria. It is estimated that 10,000 of these latter arrived between the end of 1914 and the time of this inspection, but only 2080 were then remaining in the encampments, the rest having left for Armenia and elsewhere. There was a very marked difference in the physical conditions of these two collections of refugees. The difference in the official food rations supplied to each was very slight as regards nutritive value; but the Jews were mostly town-dwellers, continuing to lead a life not unlike their former condition, and were able in many cases to obtain some employment, and so supplement the food supplied to them. It was noted that the Armenian refugees, who were accustomed to olive oil, disliked the cotton-seed oil supplied, and that this was not the case with the Jews, who consumed distinctly more oil. The Jews also were supplied with wheaten bread, while that given to the Armenians at Port Said had 25 per cent. maize mixed with the wheat flour. Dr. White, in concluding this very interesting report (which is fully illustrated with photographs and diagrams), observes that the weight of evidence points entirely to a faulty diet as the causal factor of the outbreak, and that pellagra was eradicated by correcting the faulty dietary, all other conditions remaining the same. Maize may have been a factor, but "certainly had no direct causal relation to the disease, and when an adequate and properly balanced ration was given pellagra disappeared." In regard to the theory of transmission by means of a biting fly (*Simulium*), "nothing of the nature of a protozoal cause could be discovered, nor could any connexion with biting insects be found."

## SIR NORMAN LOCKYER.

THE death of Joseph Norman Lockyer, announced this week, will be regretted by a wide scientific circle. He was born at Rugby in 1836. A shrewd and acute observer, he contributed valuably to his own science, that of astronomy, and well earned the Fellowship of the Royal Society awarded in 1869. The year before he had found the helium spectrum line in the sun, a discovery which led the way to the search for terrestrial helium. This gaseous element, as we all know, was subsequently found, and is now playing an important rôle in aeronautics, since, while it is buoyant, it is, unlike hydrogen, non-combustible; and a practical development of its application has been begun in Canada, where it is derived from natural gases. Sir Norman Lockyer did a further service to science when he started the first number of *Nature* in 1869, a journal which soon attained the authoritative position which it has held ever since. Lockyer was created K.C.B. in 1897.

## SUBCHRONIC LETHARGIC ENCEPHALITIS.

IN the second number of the *Wiener Archiv für innere Medizin* (Bd. I., Hft. 2, June, 1920), which is being published under the supervision of Professor W. Falta and Professor K. F. Wenckebach, there are seven original articles, the quality of which is all the more striking when the deplorable conditions obtaining in Vienna are considered. In one of these articles Dr. Constantin Economo records in detail a case which shows that lethargic encephalitis may run a subchronic course, terminating fatally after nearly two years of ill-health.

The patient was a man, aged 45, whose illness began on April 5th, 1917, with profuse perspiration and pains in the limbs and back. A few days later his temperature was found to be 38°C. and he was very drowsy. Meningitis being suspected, he was admitted on April 26th to hospital, where he lay unconscious. There was marked rigidity of the body and his head and limbs were extended. No paralyses or loss of reflexes could be discovered, but the reflexes of the abdominal wall were considerably reduced. He groaned, but did not speak, and had to be fed artificially. When light was flashed on his eyes he would turn his whole head away without apparently moving his eyeballs. By June 2nd the drowsiness had passed off and he was less apathetic; he could sit up in bed without help, understand what was said to him, and in large, clumsy handwriting he could show that he understood simple questions, but speech was limited to inarticulate sounds. Later in the summer of 1917 his general condition was better; he could walk, and, as his writing showed, there was no aphasia. There were no sensory disturbances, but certain curious choreiform twitchings of his fingers had developed. At first he could suppress these movements at will. By the end of August they had extended to the lower limbs, causing him considerable discomfort. Wassermann's reaction was negative, and lumbar puncture yielded clear, sterile fluid under little pressure. In 1918 the athetosis diminished, but there was no improvement in the disturbances of speech. He choked over his food and gradually lost ground, becoming apathetic. In spite of careful nursing he became profoundly cachectic and died early in January, 1919.

The most significant feature of the post-mortem examination was the demonstration in various parts of

the central nervous system of both old and recent foci of inflammation. It would thus appear that after the fulminating onset of the disease the organism had been unable to eliminate the virus which had persisted, giving rise to chronic, slowly progressive inflammatory changes. Ultimately they wore the patient down. As Dr. Economo points out, epidemic encephalitis usually terminates in death or complete recovery; the recorded cases of survival of the disease with persistence of a paralysis or some other symptom are very rare. But as this case shows, the disease may remain smouldering for nearly two years, with signs of extension of the inflammation from one part of the brain to another.

## THE PROBLEM OF DENTAL DISEASE.

THE deplorable state of the nation's teeth is only too well known, and health authorities are busily engaged in promoting schemes for treatment. At the recent meeting of the British Dental Association at Bournemouth, the chief interest centred around this perplexed problem of the dental needs of the public. Dr. R. A. Lyster, the medical officer for Hampshire, pleaded in eloquent terms for further research into dental disease, and from his remarks as reported it would seem that the fundamental causes of dental disease are unknown and that it is therefore useless to lay down definite rules for prevention. This statement, if it gains currency, will tend to undermine belief in the excellent work that has been done on the ætiology of dental disease and on which the present rules for prevention of dental disease are based. These rules have already stood the test of time and produced excellent results, and have abundantly confirmed the correctness of the views held on causation. Speaking in a general sense, dental caries is due to the altered character of the carbohydrate diet and the enormous consumption of sugars, especially those of the mono-saccharide group. In the case of periodontal disease also it is clear that the lodgment of food in the interdental spaces is a prominent factor. Mr. R. Lindsay in his public lecture admitted that the remedy was largely concerned with food, but considered that to ban any common foodstuff was outside the sphere of practical politics in the question of the prevention of dental disease. But surely, if one is convinced of the cause, it is culpable negligence to evade the teaching of prevention simply because the obstacles to a radical change in diet appear too great. The stoutest wall will give way before constant battering, and so with this question of food and dental caries. Dentists may be appointed to schools, to the army, to the navy, to maternity centres, but little headway will be made towards the banishment of dental disease unless the simple rules of prevention are inculcated. It is, indeed, a stigma to medicine that the most prevalent disease of the human race is the most easily preventable. If the Ministry of Health will concentrate on teaching prevention by means of popular lectures, illustrated with lantern-slides, and by booklets written in simple language, in the course of two generations we shall see an end to preventable dental disease, and there will be but little need for an elaborate public dental service.

## THE "DORSAL POINT" IN HEPATIC COLIC.

IN *Lyon Médical* Dr. Raymond Pauly has described a sign which appears to be of considerable value in the diagnosis of hepatic colic. He points out that in this condition, as in all analogous syndromes, there are subjective and objective pains. The subjective pains are generally vague, whether in their form and intensity or in their localisation and radiations, and therefore are not of great diagnostic value. Such is the pain in the right shoulder in hepatic colic. It is seldom described spontaneously, and when asked to show its position the patients indicate vaguely the right shoulder and some even indicate the left. The radiations of the pain are numerous. Professor Chauffard described those which occur in the area of the right phrenic nerve, in the supra-clavicular, supra-deltoid, supra-mammary regions, at the angle of the scapula, and at the eighth, ninth, tenth, and eleventh dorsal spines. The greater part of these radiations are purely subjective and do not correspond to a point at which pain can be provoked by pressure of the finger. But there are two such objective points—the epigastric and the cystic; the abdominal pains, however, being often so intense that it is difficult to demonstrate these points clearly. Dr. Pauly therefore tried whether the vague pain felt in the right shoulder corresponded to a painful point, and in 21 cases constantly found a point tender on pressure between the spinous processes of the vertebræ and the border of the right scapula at the level of the fourth or fifth intercostal space at a distance of 2 or 3 cm. from the middle line. This point is therefore very different from that described by Professor Chauffard in the position of the eighth to the eleventh dorsal spines. Dr. Pauly terms this the "dorsal point" (*point dorsal*). The best means of testing for it is to seat the patient on the bed, with the arms in front to give support. The observer, standing on the right of the patient, presses with his left thumb on the different intercostal spaces between the spine and the right scapula, from above down. On arriving at the fourth or fifth space a painful grimace is provoked, and the patient often sits up brusquely, complaining of severe pain. As a means of control it is always useful to apply the test on the left side. Some patients complain also of pain on this side, but it is less severe. The intensity of the pain varies. Sometimes a cry of protest is provoked; at other times the patient simply says that a little pain has been produced. As a general rule, the intensity of the pain varies directly with that of the colic, and it gradually diminishes as the other symptoms pass off. Is this point more important than the points already described? According to Lejars, the cystic, epigastric, xiphoid, and costal (extremity of the twelfth rib) points may be found in other affections than hepatic colic—in gastric, colic, and appendicular affections. The dorsal point must be distinguished from the "painful points" of intercostal neuralgia, which are near the spine itself and not 2 or 3 cm. distant. Further, the other neuralgic points—lateral, anterior—will also be found. It is important to prove the absence of the point in other painful affections which have to be differentiated from hepatic colic. Dr. Pauly has found the dorsal point absent in gastric and duodenal ulcer and acute appendicitis. Its diagnostic value therefore seems to be established. What is its pathogenesis? The motor and sensory supply of the biliary passages comes from the great splanchnic nerves which originate in the thoracic ganglia of the sympathetic from the fourth to the tenth, but the upper roots are the most important. The communicating rami of these ganglia run in the corresponding nerve roots, and can thus affect the nuclei of the corresponding sensory nerves. Thus the sign is due to hyperæsthesia of the area of distribution of the posterior branch of the fourth and fifth dorsal nerves. A matter which is not explained is, Why is not the painful point of hepatic colic at the same site as that of intercostal neuralgia?

## THE U.S.A. AIR MEDICAL SERVICE.

THE Medical Service of the United States Air Force has been reconstituted since the war, and is described by Colonel A. E. Truby and Major John Dibble of the Medical Corps, U.S. Army, in the *Military Surgeon* for July. The Air Force is organised under the War Department, as is the Air Service, and its chief surgeon, Colonel Truby, is an officer of the Medical Corps. Shortly after the armistice a Director of the Air Service was appointed, who requested the Surgeon-General (Medical Director-General) to transfer the Air Division of the Surgeon-General's office to the Air Service. This was approved and the Medical Division of the Air Service was established, with the Chief Surgeon of the Air Service in charge. The specialised condition of the

Air Service, the work of the flight surgeons, the Medical Research Laboratory at Mineola, N.Y., and the highly technical examination of aviators, explain why the Air Force requires a special medical service not given to cavalry, for example, or artillery. The active flying fields are under the local commands, who are informed that flight surgeons are not available, nor are physical directors, for routine garrison work, except under very special circumstances. The flight surgeon is a selected officer of the Medical Corps, probably a pilot (with 25 per cent. extra pay like all pilots), and so with a complete knowledge of the needs and difficulties of aviators, and thoroughly in sympathy with them. On his recommendation other medical officers will take flying training so as to understudy him if required. He lives with and associates with the aviators constantly; he knows them well and can determine when they should not fly, and what sleep, food, and amenities they should have. He sees, on transfer, all officers who fly or are under flying training. An officer who volunteers for training as an aviator undergoes a very specialised medical examination, with particular attention to stereoscopic vision, field of vision of each eye for form and colour, and latent hypermetropia, which has caused crashes of officers when fatigued. The nervous system undergoes psychological investigation, and defects cannot be waived by examiners, but only by the Surgeon-General of the Army. This examination can only be made by selected officers designated by the Surgeon-General who have been through the examination course at the Medical Research Laboratory. The examination report is in triplicate. One copy remains at the station, and two are sent to the Director of the Air Service for the chief surgeon; of these one with his remarks remains in the Director's office, while the other is returned to the flight surgeon. The Chief Surgeon has a card index of officers, their examinations, crashes, and so on, and is accumulating statistics, which in time will decide the ages for receiving cadets, length of service for pilots, why pilots wear out, who should fly with what planes, and so on. The Chief Surgeon is forming a library, and air ambulances to rescue men who fall in deserts or otherwise out of reach are being devised. He supervises the medical research laboratory, and an "Air Medical Bulletin" is announced. The work of the Medical Service appears to be welcomed by the Air Service; it is certainly of great value to the force, and must prove useful also to general medicine in the United States. We indicate elsewhere the value to civil medicine which has been shown to emanate from the researches of the medical department of our Air Force.

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Dr. Philip John Hensley, consulting physician to St. Bartholomew's Hospital and sometime Censor to the Royal College of Physicians, died at Farnham on August 8th in his eighty-second year.

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As will be seen in our Parliamentary Intelligence, on the eve of rising for the recess Dr. Addison introduced in the House of Commons a Bill, which was read a first time, embodying a number of far-reaching provisions in regard to housing, hospital accommodation, and the reception of early mental cases. It is proposed to give to all the larger local authorities—those of counties and county boroughs—power to supply and maintain their own general and special hospitals, to make contribution to voluntary hospitals within their areas on terms acceptable to the Ministry of Health, to maintain Poor-law hospitals and infirmaries, and to keep up a local ambulance service for accident and illness.

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WEYMOUTH AND DORSET COUNTY ROYAL EYE INFIRMARY.—The annual meeting was recently held at Weymouth. The institution was established in 1836 by Mr. Charles Bridge, and he was the first surgeon to the infirmary. The medical report stated that for the 12 months ended June 30th, 1920, the in-patients admitted were 80, and the out-patients numbered 803. The financial statement showed a favourable balance of £112.

# ECONOMIC CONDITIONS IN VIENNA:

## THE FATE OF THE UPPER MIDDLE CLASS.

A REPORT written by Marjorie Vernon, a member of the Friends' Relief Mission in Vienna, and issued by the Friends' Emergency and War Victims Relief Committee (27, Chancery-lane, London, W.C.2), pictures the desperate, and apparently hopeless, position of the educated middle class in that city. Although the report deals with this class as a whole, it may be taken as applying specifically to the members of the Viennese medical profession. The general condition of malnutrition set out constitutes in itself a medical problem.

*Numbers Involved.*

Of the total population of Vienna, stated as 1,838,708, an undue proportion—namely, about 352,000—are upper middle-class people, and these were made up, according to the census of 1910, in the following way:—

| | | |
|---|---|---|
| 1. Court, State, and other public officials ... ... ... | 75,000 | |
| Plus dependents ... ... ... ... ... ... ... | | 139,000 |
| 2. Teachers, professors, and all those concerned in education ... ... ... ... ... ... ... ... ... ... | 15,000 | |
| Plus dependents ... ... ... ... ... ... ... ... ... | | 25,000 |
| 3. Other professions (lawyers, doctors, artists, &c.)... | 15,000 | |
| Plus dependents ... ... ... ... ... ... ... ... ... | | 29,000 |
| 4. Small property owners—people living on investments ... ... ... ... ... ... ... ... ... ... | 52,000 | |
| Plus dependents ... ... ... ... ... ... ... ... ... | | 106,000 |
| 5. People in institutions (orphans, &c.) ... ... ... ... People preparing themselves for professions (students, &c.) ... ... ... ... ... ... ... ... ... | | 43,000 |
| | | 342,000 |
| 6. Present estimate of number of officers in Vienna | | 10,000 |
| | | 352,000 |

And the list is not complete for it does not include bank and other private officials, or any shopkeepers. A considerable number are new-comers without employment, or people who have lost their work and subsist on their pensions.

*The Middle-class Balance-sheet: Yearly Budget of a Family in England and Austria Compared.*

| Articles. | England. Quantities. | Price. £ s. d. | Austria. Quantities. | Price, kronen. |
|---|---|---|---|---|
| Bread per wk. ... | 23 lb. | 0 7 0 | 4 kg. ... ... ... | 24* |
| | | | 8·8 ,, ... ... ... | 264† |
| Flour ... ... ... ... | 3 ,, | 0 0 7 | 2 ,, ... ... ... | 23* |
| Sugar ... ... ... | 2 ,, | 0 2 4 | 15 dekkas ... ... | 7* |
| | | | 90 ,, ... ... | 135† |
| Meat ... ... ... ... | 7 ,, | 0 10 0 | 10 ,, ... ... | 124* |
| | | | 3 kg. ... ... ... | 450† |
| Potatoes ... ... ... | 33 ,, | 0 4 6 | 15 ,, ... ... ... | 129 |
| Fat ... ... ... ... | 3½ ,, | 0 4 6 | 12 dekkas ... ... | 14* |
| | | | 1½ kg. ... ... ... | 240† |
| Jam ... ... ... ... | 4 ,, | 0 3 8 | 2 ,, ... ... ... | 80† |
| Oatmeal ... ... ... | 2 ,, | 0 1 0 | 1 ,, ... ... ... | 10† |
| Vegetables ... ... | 28 ,, | 0 7 0 | 12·8 ,, ... ... ... | 128† |
| Milk ... ... ... ... | 14 qts. | 0 14 0 | 14 litres ... ... ... | 140 |
| Cereals ... ... ... | 2 lb. | 0 1 0 | 1 kg. ... ... ... | 50 |
| Dried beans ... ... | 1 ,, | 0 0 6 | ½ ,, ... ... ... | 14 |
| Fish, eggs or rabbit | 6 ,, | 0 10 0 | 3 ,, ... ... ... | 240 |
| Cheese ... ... ... | 1 ,, | 0 1 6 | ½ ,, ... ... ... | 75 |
| Fruit ... ... ... ... | 8 ,, | 0 4 0 | 3½ ,, ... ... ... | 175 |
| Tea ... ... ... ... | ¼ ,, | 0 0 7 | ⅒ ,, ... ... ... | 22 |
| Coffee ... ... ... | ½ ,, | 0 1 0 | ¼ ,, ... ... ... | 13 |
| Cocoa ... ... ... | ¼ ,, | 0 0 10 | ⅒ ,, ... ... ... | 22 |
| Boot polish ... ... | 1 tin | 0 0 4 | 1 tin ... ... ... | 13 |
| Soda ... ... ... ... | 1 lb. | 0 0 2 | ½ kg. ... ... ... | 4 |
| Soap ... ... ... ... | 1 ,, | 0 1 4 | ½ ,, ... ... ... | 30 |
| Weekly total ... ... ... ... | | 3 15 10 | ... ... ... ... ... | 2,326 |
| Yearly total ... ... ... ... | | 197 3 4 | ... ... ... ... ... | 120,952 |
| Coal 10 tons a year ... ... | | 22 10 0 | 364 kg. ... ... ... | 728* |
| | | | 9636 ,, ... ... ... | 48,180† |
| Electric light ... ... ... | | 6 0 0 | ... ... ... ... | 1,560 |
| Firewood ... ... ... ... | | 3 0 0 | 800 ,, ... ... ... | 800 |
| Trams about 6d. a day ... | | 9 0 0 | About 6 k. a day ... | 2,190 |
| Repairs to house and clothes ... ... ... ... | | 5 0 0 | | 1,000 |
| Rent ... ... ... ... ... | | 50 0 0 | | 1,000 |
| Yearly total ... ... | | £292 13 4 | Yearly total ... | K176,410 |

* Denotes the rationed quantities.
† Quantities assumed to be smuggled in.

Now, although the wages of the Viennese workers are on an average between 23 and 33 times what they were in 1913, the incomes of the "Mittelstand" have only increased four to eight-fold, while the salaries of pensioners have hardly risen, and the income of people who live on their investments not at all. But on the

expenditure side, the yearly budget of a middle-class family in Vienna, consisting of father, mother, and two children, now compares, as shown in the table given above, with that of a similar family which buys the same things in England at English prices.

The result shows that £292 odd buys the same amount of goods in London as 176,000 kronen will buy in Vienna, and it will be observed that this budget makes no allowance for clothes, rates and taxes, insurance, doctors and dentists, holidays and amusements, education, books and newspapers, wine and tobacco, replacement of furniture, house linen and kitchen utensils, or domestic service. This whole budget, which only includes the bare essentials of life, comes in Vienna to 176,000 kronen. The highest salary, with very few exceptions, which anyone gets, is 96,000 kronen, and this is far in excess of the average.

*Typical Examples of Privation.*

The report goes on to give concrete instances of the actual lives of representative middle-class folk under this régime. We transcribe two of them.

The man is a Finanzsekretär in the Government service, and before the war he earned 3600 kronen a year. In those days he lived at Krems—a town about three hours journey from Vienna—with his wife and four children, a boy and three girls. He was quite well off, kept a servant, and lived very comfortably. His income has now been raised to 42,000 kronen. On this income he finds it impossible to keep his family together at all. He has left his wife and the little boy in Krems—the eldest girl has got work for which she is paid 12,000 kronen a year. The two little girls of 12 and 14 have been sent to a boarding school which costs him 600 kronen a month. He himself has come to live alone in Vienna in one little room for which he pays 80 kronen a month. These are favourable terms as the landlord happens to be a friend of his. For his midday meal he goes to the Gemeinschaftsküche (it corresponds to our war-time national kitchen), where he pays only 7 kronen for his meal and gets soup, vegetables, and a mehlspeise, which corresponds to our pudding. Nowadays in Vienna a mehlspeise is often just a piece of slightly sweet bread or perhaps cooked tapioca with cinnamon and sugar sprinkled over it. These Gemeinschafts- and Kriegsküchen are depressing places; sometimes they are underground, always they are dismal. You see long tables covered with dirty table-cloths at which rows of shabby disheartened people sit, silently lapping up watery soup or stodging through mounds of potatoes and vegetable marrows. One aluminium spoon and fork suffices for the whole meal. In the evening, however, our friend the Finanzsekretär has to go to a restaurant, as the kitchen is closed. There he will find it hard to dine under about 20 or 25 kronen, and if he wants any meat he will have to pay about 40 kronen more. To add to his troubles his little girls are both unwell—one has had pleurisy, and the other child has to see an oculist—all causes of additional expense.

A man of 31, who is an assistant lecturer on Eastern European languages and history at the University. He has a wife and one child of 8, and his salary is 21,600 kronen a year. He pays 720 kronen in rent and 480 for light a year. The whole family go to the Gemeinschaftsküche for their midday meal, which costs them 9 kronen each. The child is very delicate and underfed, although the parents make tremendous sacrifices to buy her three or four tins of condensed milk each week. Each tin has to be smuggled in and costs 50 kronen. Professors' salaries, of course, vary considerably, but in no case do they ever approximate to a real living wage. I have before me a list of some half dozen professors—personally known, but quite average cases. Here are two samples: A professor of a university, 53 years old, with a wife and two children—his total salary is 20,000 kronen a year. An assistant professor, 58 years old, with a wife and three children—his total salary is 19,690 kronen a year; and one could quote such cases indefinitely. There is, however, a further tragedy involved for these professors. They have not enough to eat; they cannot clothe themselves or their families properly; but besides this they cannot even pursue their work without being held up at every point. All printing, for instance, has gone up by at least 2000 per cent. in the last year or so. Then the interchange of scientific papers and magazines between the professors and universities of different countries has practically ceased. For even were the countries willing, Austria, even in this sphere, has very little to give. Scientific research, again, is only persevered in against fearful odds. The prices of things needed for an ordinary chemical laboratory have risen by about 4000 per cent. Ordinary drugs and chemicals are anything from 40 to 100 times as dear as before the war. There was a little while ago an almost comically pathetic article in a newspaper by a doctor engaged in research work. He wrote most despondently about the terrible cost of rabbits and guinea-pigs—essential for research work—and lamented bitterly that people nowadays eat them in such vast quantities as to make them almost worth their weight in gold. The letter made one smile, yet it revealed the hopeless blank which faces people here whichever way they turn. They are hungry and cold and turn to their work for help, and there the same spectre of despair faces them again.

*The Health of School Children.*

The net result of all this suffering is practically impossible to get in figures, which apply only to the middle class. Mrs. Vernon has only been able to get one set of figures where the middle class can be picked out and compared with the working class. There is now going on in Vienna a medical examination of all school children under 14 years of age. This examination is specially an inquiry into underfeeding and anæmia. The children are divided into three classes, the first class being the best and the third the worst fed. Vienna is divided into districts and the results in each district are grouped together. In the following table four middle-class districts are compared with three working-class districts:—

A. Middle-class districts—number examined 9308.

| | % children in Class I. | % children in Class II. | % children in Class III. |
|---|---|---|---|
| 1 ... ... ... ... | 38·4 ..... | 15·2 ..... | 46·4 |
| 2 ... ... ... ... | 25·4 ..... | 53·3 ..... | 21·3 |
| 3 ... ... ... ... | 18·0 ..... | 45·6 ..... | 36·4 |
| 4 ... ... ... ... | 11·8 ..... | 20·6 ..... | 67·6 |
| Average ... ... | 23·4 ..... | 33·7 ..... | 42·9 |

B. Working-class districts—number examined 41,194.

| | % children in Class I. | % children in Class II. | % children in Class III. |
|---|---|---|---|
| 1 ... ... ... ... | 14·4 ..... | 38·3 ..... | 47·3 |
| 2 ... ... ... ... | 47·2 ..... | 26·4 ..... | 26·4 |
| 3 ... ... ... ... | 19·5 ..... | 34·0 ..... | 46·5 |
| Average ... ... | 27·0 | 32·9 | 40·0 |

It will be seen that the middle-class districts show slightly worse results than the working-class districts. Mrs. Vernon went with the school doctor to see the medical examination in progress, and reports:—

We first went to a school which is situated in one of the healthiest districts of Vienna. This district is chiefly inhabited by middle-class people, it is almost outside the town and lies very high. The air is fresh and pure, and in normal times the children are particularly healthy. Later we visited a school where the children come almost entirely from working-class homes. The district has the reputation of being one of the worst in Vienna—it lies low, the houses are more crowded together, the people more ignorant. And yet one undoubtedly got the general impression that the children in the middle-class school were worse developed, were whiter and thinner than those in the working-class school. The school doctor also bore this out, and it really does appear to be true. When one thinks of all the advantages which middle-class children have—the air space first and then the intelligence in buying food, the care and thought, the cleanliness, everything in the child's favour—these facts and figures are rather striking.

*Can and Should Relief be Attempted?*

In concluding the report Mrs. Vernon raises the question whether middle-class relief is a right thing to undertake at all. Some may feel that in a country where the barest necessities of life are unprovided for, where for many years to come no one will have money to spend on anything but bread and butter, a cultured middle-class does not stand a chance of surviving, and that to keep it alive is merely to foster an artificial state of society which, if left alone, would readjust itself and reach a position of stable equilibrium more quickly, and therefore ultimately with less suffering, than if relief agencies intervened. She answers her question with another:—

"When, however, the next generation grows up, what will it say if we have saved the men who worked to feed and clothe humanity, but allowed those to die whose work was to keep civilisation alive? In Vienna, especially, the professors, doctors, artists, musicians, and sculptors have a claim which cannot be denied."

How the apparently impossible is to be achieved and the upper middle class in Vienna, including the doctors, is to be saved, upon this the report does not enter. The facts are recorded without minimising or exaggerating their significance.

## MEDICINE AND THE LAW.

*Godman* v. *Maclean.*

IN this action the patient sued a medical man for damages for alleged negligence in the use of cocaine. The drug was employed as a local anæsthetic in operating on a small cyst of the hand, a 5 per cent. solution combined with adrenalin being injected. After the injection of 5 minims it was found that the requisite anæsthesia had not been produced, and a further injection of 5 minims was made when alarming symptoms followed. An illness lasting 3½ years, from which the patient had only partially recovered, was ascribed by the plaintiff to the effects of the cocaine, and this was apparently not in dispute. The only question, indeed, for Mr. Justice Salter who tried the case was that of the alleged negligence. The negligence, his lordship said, was alleged in three ways: (1) That it was negligent to use cocaine for hypodermic injection at all; (2) that too large or too strong a dose was administered; (3) that there was unskilfulness and carelessness in the actual administration of the second injection. It was contended that cocaine as used was obsolete, and known to be obsolete and dangerous. As to this, his lordship understood from the evidence before him that the risk was practically confined to persons abnormally sensitive to the drug, a peculiarity of the patient not discoverable beforehand. With regard to the danger of using cocaine the relative merits of other drugs for the same purpose and the correct dosage he was satisfied from the evidence called on both sides that the highest medical opinion was not in agreement. He had the evidence of chemists and of pharmacists that cocaine was still widely used, and that although the proportion prescribed was frequently less than 5 per cent., that proportion was used if the strength was not mentioned because it was the strength prescribed in the British Pharmacopœia. In fact, cocaine was included in the British Pharmacopœia for the purpose and in the proportions in which the defendant had used it, and he had the evidence of the defendant as to his own experience in the employment of the drug. A medical man could not be convicted of negligence for having administered a preparation agreeing both in strength and amount with the British Pharmacopœia, and of which, moreover, he had had satisfactory experience for many years. As to the suggestion that a small vein had been pierced in making the second injection, even if this had been so there evidence before him that it was possible to inject cocaine into a small or even into a larger vein without danger to a normal person, such as evidence showed the plaintiff apparently to be.

In giving judgment for the defendant his lordship expressed deep sympathy with the plaintiff. Costs were not asked for on behalf of the defendant, and a counter claim was not pressed, the plaintiff's counsel expressing her thanks to the defendant for his attitude in this. The defendant and the London and Counties Medical Protection Society, who supported him, are to be congratulated upon the conclusion of a professional experience which must have caused the former considerable distress and anxiety.

*Hypnotism and the Law.*

It is sometimes made a subject of unfavourable comment that there is no specific legal provision in the United Kingdom against the abuse of hypnotism by unscrupulous persons, and the reviews of a recent book have called attention to the position. The existence of a danger of this kind appears to be recognised in some other countries. In Belgium, at any rate, it has for many years been illegal to hypnotise, or cause to be hypnotised, any person by way of public exhibition. In a similar manner penalties of fine and imprisonment may there be imposed on anyone who, not being a medical practitioner or the holder of a Government licence for the purpose, hypnotises a person who is under 21 years of age or is of weak mind. A penalty also is provided for anyone who, with the intent to defraud or to injure anyone, causes a hypnotised subject to write or sign any document embodying an obligation. Any person uttering or making use of any document so obtained is equally punishable. Whereas, however, hypnotism might be made the subject of legislation in this country by way of precaution and in order to deter possible evil-doers, it has not been found apparently that public exhibitions of hypnotism have been a serious source of danger to the public, or that the control exercised by the hypnotiser has been made use of for criminal purposes in any manner with which the existing law cannot deal. Probably with us the most serious danger to the public lies in the freedom of the quack to exploit hypnotism for alleged therapeutic purposes; and the most useful and effective way to protect the ignorant from being imposed upon, and the public generally, would be to forbid the exercise of hypnotism for any purpose except by, or under the control of, a medical practitioner. Meanwhile, none but foolish persons will trifle with hypnotism or invoke its aid except under medical advice.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

*The Authority of the Local Government Board in Ireland.*

IN many parts of Ireland the authority of the Local Government Board is being flouted. At a meeting of the Cavan board of guardians an order has been made that no books or documents be produced for inspection of auditor or other official of the Local Government Board, and that minutes of its proceedings be sent to Dail Eireann (the governing body of Sinn Fein). The clerk pointed out that the grants received by the board of guardians totalled £3262, and by the district council £3032. It was explained that (in accordance with the recent circular of the Local Government Board) these grants would soon be stopped. Co. Cavan Council also has ordered that in future minutes and correspondence be sent to Dail Eireann only, and a special committee was appointed to consider the financial position that might be created by the withdrawal of grants made by the Treasury. The Cavan board of guardians has decided that policemen's wives holding positions as district nurses under the board should be called upon to resign. The Finance Committee of the Donegal County Council has decided to refuse payment of a sum of £14 14*s.* 11*d.* for medical and nursing expenses incurred in connexion with police injured near Dungloe on Dec. 12th, 1919. The money was paid to the infirmary authorities, and the Lords Justices have certified for its payment as mentioned in a letter sent by the under-secretary of the Lord-Lieutenant to the Donegal County Council, and requesting that an order payable to the under-secretary be returned by the council at an early date.

*The Irish Public Health Council's Report.*

Although the report of the Irish Public Health Council was issued almost two months ago, no public action on it has so far been taken by the medical profession. Whether, indeed, any legislation will follow is extremely doubtful, for if the present Home Rule Bill becomes law, it is probable that it will be left to Ireland itself, or to the two parts of Ireland involved, to carry out whatever measures they like. It is believed that local medical committees will be soon asked, in various places, to discuss the report and to instruct delegates to represent their views at a meeting of the medical profession, to be subsequently held in Dublin, as to whether the report is to be accepted or not, or modified before its acceptance.

*Vital Statistics.*

Some interesting statistics are found in the return of the Registrar-General for the first quarter of 1920. The birth-rate for the quarter—23·9 in every 1000 of the estimated population of Ireland (4,470,000 for 1920)—is 1·7 above the average rate for the corresponding quarter of the ten years 1910–1919, and 3·9 above the rate for

the first quarter of 1919. The death-rate (16·9 per 1000) is 8·8 below the rate for the same quarter in 1919, and 4·3 below the average for the first quarter of the ten years 1910–1919. Curiously the returns of pauperism show an increase of 320 in the average number of workhouse inmates, and an increase of 784 in the average number of persons in outdoor relief, and this at a time when wages in every department of industrial life never were so high. The marriages registered in Ireland in 1919 were 26,977, and oddly, the largest number, 7241, were registered in the third quarter (July–September). Of the deaths registered in the first quarter of 1920 (there were in all 18,882) epidemic diseases caused 974 (0·87 per 1000 living), being 0·14 above the average for the first quarter of the five preceding years. Whooping-cough comes first, with 279 deaths, then measles with 208, diarrhœa with 159, diphtheria with 133, scarlet fever with 129, enteric with 54, dysentery with 9, and typhus with 3. There were in the quarter under review 2023 deaths from all forms of tuberculosis, equal to an annual rate of 1·81 per 1000 of the Irish population, while the deaths of infants under one year old are equal to 90 per 1000 births.

August 16th.

# Public Health.

## REPORTS OF MEDICAL OFFICERS OF HEALTH.

### THE HEALTH OF LURGAN (ULSTER).

IN a country where "sanitary matters are at least 30 years behind the state of administration in the rest of the United Kingdom" it is pleasant to come across a record of such admirable work as is contained in the interesting report of Dr. Samuel Agnew, the medical superintendent officer of health of Lurgan urban sanitary district, for the year 1919. During the time that he has been officially connected with Lurgan (40 years) lanes and courts have been abolished, all dwelling-houses have been provided with separate conveniences and tiled yards, and a public water-supply installed since 1895. This water is pumped up from Lough Neagh to filtering beds and then conveyed to Lurgan. At one time, acting on expert authority, Belfast declined to take water from Lough Neagh, but the advice has since been proved to be wrong by the practical experience of Lurgan—one of Ulster's most progressive industrial towns—where, since 1895, when the Lough Neagh supply was begun, no epidemic usually ascribed to impure water-supply has occurred. In 1919 the average death-rate in Lurgan was 16·5, the birth-rate 22·0, and the infantile mortality was only 52 per 1000 births, and there was not a single death from small-pox, typhus, enteric, scarlet fever, diphtheria, measles, or whooping-cough. Dr. Agnew expresses grave disappointment with the working of the Tuberculosis (Prevention) Act. Formerly the prescribed conditions relating to the notification of tuberculosis, applied only to the pulmonary type, were that the persons to be so notified must be habitually sleeping or working in the same room as other persons or employed in the preparation and distribution of articles of human food intended for sale to the public. An amended Order was issued last year by the Local Government Board by which notification—in Ireland—applies in every case in which a person, not being at the time in receipt of institutional or other treatment under an approved scheme for the treatment of tuberculosis, is suffering from tuberculosis of any form at any stage in which the sputum or other infective discharge of, or from, such person is, in the opinion of the medical practitioner attending such person, liable to communicate the disease to other persons. The objection even to this improved form of notification is that in most cases the disease has so far advanced (to fulfil the conditions) that notification is too late and that nothing at all is being done to prevent the bovine form of the disease. In Ireland hardly anything is being accomplished in the prevention of tuberculosis, sometimes called the "Irish disease," now, just as typhus was in former times. An admirable maternal and child-welfare scheme, with pre-natal department, is in active work in Lurgan, which is really one of the most advanced public health towns in Ireland.

## SCHOOL MEDICAL INSPECTION.

### BIRMINGHAM.

The number of children on the school registers in Birmingham (December, 1919) was 153,648, and the total number examined at the routine inspections during the year was 40,515; the total number of cases treated at the various clinics was 50,853. The percentage of defects treated was 69·5. Analysis of the cases of defective vision treated by Dr. R. Beatson Hird shows that out of 723 fresh cases examined 595 were found to require glasses. Of these, 73·3 per cent. were cases of hypermetropia (160) or hypermetropic astigmatism (277), and 26·4 per cent. were cases of myopia (51), myopic astigmatism (71), or mixed astigmatism (36); that is, astigmatism in one form or another accounted for 64·4 per cent. of all the cases of visual defect.

*Convergent squint.*—Dr. A. W. Aldridge, who also treated eye cases, emphasises the importance of very early treatment—"within a month of first attendance at school." Neglect or delay in treatment leads to permanent disturbance of vision, as the squinting eye is not used. By placing a pad of wash-leather over the good eye (two layers of wash-leather a little larger than the frame of the spectacles, so that the glass is covered by it on each side like a muff, the wash-leather being stitched round the glass), the squinting eye is made to do its work.

"When the sight in each eye is practically equal (usually after three or six months) the shade is worn on alternate eyes, and after the lapse of another year the vision in each eye will often be about 6/9, with an alternating squint."

In favourable cases this will entirely disappear, but the shading must be continued for an hour or two each day for a long time after apparent cure, as relapses are still apt to occur.

*Tonsils and adenoids.*—There was considerable increase in the number of children operated on for these—1429 compared with 1021 in the previous year; moreover, the waiting list of children needing treatment at the end of the year represented nearly a whole year's operations.

"These figures give cause for thought and inquiry. Either the tonsils (including the tonsillar tissue, enlargement of which is known as 'adenoids') have a definite physiological function, with which we interfere at a certain cost to the organism, or the enlargement is a reaction against some morbid cause. ..... There is little doubt that the enlargement of these tissues is, in fact, due to an infective process, spread like other infections, possibly as a result of the aggregation into schools."

Open-air conditions are indicated.

*Ringworm* has been treated by means of X rays with great success; in 1911 the cases of ringworm were estimated to be as many as 1400; in 1912 and 1913 the numbers of cases known to exist were 2281 and 2131 respectively; at the end of 1919 the total number awaiting examination and treatment was only 37. This very satisfactory result is due entirely to the introduction of X ray treatment, and in not a single case have any permanent patches of baldness been left.

*Tuberculosis* shows an improvement in 1919 over the preceding years, not only those of the war period (when the incidence "was probably a reflex of the lowered health margin due to war conditions"). The notified cases among children up to 15 years of age, which were 732 in 1913 and 918 in 1916, have fallen to 844 in 1917, 716 in 1918, and 588 in 1919. Open-air treatment is carried out at the Yardley-road Sanatorium.

*Influenza* is said to have "caused a heavy mortality amongst the child population of the city." No details are furnished, and the number of deaths (among children of school age, 5 to 15) is stated as 42, compared with 223 in the previous year (p. 35); on p. 21 the deaths in 1918 between 5 and 15 years of age are stated as 357.

Open-air teaching is carried out to a considerable extent by means of an open-air school at Uffculme, a

"roof-class" at St. Thomas's and St. Alban's, and playground classes at several schools.

*Disinfecting apparatus.*—The need here is great. It is to be regretted that 35 per cent. of all the children examined showed the presence of vermin; some improvement, however, has been effected, as 64·81 per cent. were found to be "clean," compared with 56·6 per cent. in 1915. Scabies has increased in prevalence (1202 cases treated, compared with 603 in 1917). This has been largely due (as elsewhere) to return of infected soldiers from active service. Unfortunately, only one of the clinics is provided with a disinfecting apparatus; accordingly the children in many cases have to put on infected clothing after being bathed. The need for increased facilities for disinfecting clothing is obvious. Birmingham, according to the last census (1911), ranks as the largest city in England after the metropolis, and when once the urgency of this requirement is recognised there can be no doubt that the deficiency will be made good.

### BRISTOL.

In his report to the Bristol Education Committee for 1919 Dr. R. A. Askins, the school medical officer, draws attention to the fact that "one of the lessons of the war has been the realisation of the large amount of physical unfitness in adults due to want of care and treatment during childhood, and consequently a powerful incentive has been given to improve and enlarge a work which has for its object the raising of the standard of health of those children who are to form the future of the race." The full scheme of medical inspection has been again brought into action, and both the central clinic and that at Bedminster have been reorganised and the work extended. The importance of the help given by head teachers, as Dr. Askins remarks, cannot be overestimated, and they, in return, recognise the help given them by the school medical officer in regard to absentees, &c. Reference is also made to the valuable work of the school attendance department: a large number of refractory cases are interviewed personally by the superintendents, who seldom fail to secure the compliance of the parents. In this way the school authority is often spared the trouble and unpleasantness of undertaking a prosecution for non-attendance. The full scheme of inspection in detail has been resumed since April, 1919, the total number examined in the code groups of entrants, 8-year-old children, and leavers being 19,374; besides which there were 5696 specially examined.

*Defects requiring treatment* that bulked most largely in the routine examinations (code groups) were as usual teeth and throat cases, 1360 of the former and 1223 of the latter, in addition to 253 and 69 respectively needing to be kept under observation. Malnutrition was considered to need treatment only in 29 children out of the whole 19,374 in the code groups, and only eight others were specially brought forward as needing care on this account. No evidence of physical deterioration in the young, due to the special economic circumstances of the times, can be gathered from these statistics. Organic heart disease was diagnosed in 113 children, and definite tuberculosis only in 25, though its presence was suspected in 125 others. Three inspection clinics are held in the city, where special cases are sent by head teachers, nurses, and attendance officers. Of the 4622 children who were treated more than half (2444) were cases of skin disease (ringworm, impetigo, scabies, and vermin), compared with 1892 in the previous year.

"One is horrified at the high percentage of girls with lice in their hair. ..... The condition is so common that parents still regard it but lightly, and one of the first things necessary is to teach the girls themselves how serious the matter is."

It is also stated that the condition is much more common among secondary school girls than had been expected. Ringworm of the scalp was found to exist in 427 children, causing absence from school on an average for 24·2 weeks, or roughly six months. Treatment by X rays is being arranged for. Scabies (517) and impetigo (948) were also prevalent. Arrangements for treating the former disease are being made by the provision of a bathroom at one of the clinics; it is, however, undesirable that children with this complaint should be mixed up with other children at an ordinary clinic; a separate clinic with suitable bath accommodation is much to be preferred.

Referring to tuberculosis Dr. C. J. Campbell Faill reports that—

"a much larger proportion of the juvenile population is infected than had previously been suspected. There is no reason why the great majority of these children should not eventually grow up into healthy men and women. All that is required is a little knowledge and a great deal of care."

They are often exceptionally bright and intelligent. There are two open-air schools in use, but more accommodation of this kind is required, and open-air classes in the public parks are recommended. Bristol stands sixth (after the Metropolis) in regard to population among the cities of England and Wales, and appears to be carrying out with thoroughness and efficiency its aim of "raising the standard of health of those children who are to form the future of the race."

### BRIGHTON.

At Brighton the health of the 3996 school children who were medically examined in full detail during 1919 was found to be, on the whole, satisfactory. Dr. Duncan Forbes, the school medical officer, gives a useful table in his annual report of the relation of weight to height as a means of estimating nutrition.

"A child who is not up to proper weight for a certain height is more in need of feeding than is the child below *both* weight and height standard for its age, but of an average height-weight ratio; the latter child is well nourished, and its deficiency in general physique—i.e., its small size—is often due to other causes than improper or insufficient food."

This is perhaps not always recognised. The anthropometric measurements, when compared with those tabulated by Mr. Arthur Greenwood[1] in 1913, are not quite what one would expect to find; the average weight of the 1990 boys was below that of boys in elementary schools in England and Wales generally at each year of age from 3 to 15, except at 5 and 9, when it was above, and at 7 and 10, when it was equal to the average. Among girls the average weight of 2006 was above the general average at 8, 9, 10, 11, and 14; at the other ages it was below the average. On the other hand, the average height was less than that of school children in England and Wales generally only among boys of 3 years and girls of 5 and 8 years; at all other ages the heights were equal to or greater than the general average. The health of the school children generally was satisfactory. Among the 3996 children examined in detail the most numerous defects found were those of vision (151) and throat (tonsils and adenoids 269); no actual tuberculosis of the lung was detected, but 14 children were kept under observation on this account.

## URBAN VITAL STATISTICS.

(Week ended August 14th, 1920.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons, the annual rate of mortality, which had been 9·8, 9·9, and 9·6 in the three preceding weeks, fell to 9·4 per 1000. In London, with a population of nearly 4½ million persons, the annual death-rate did not exceed 8·5, or 0·6 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3·9 in Dudley, 4·4 in Hornsey, and 5·1 in Coventry, to 15·2 in Oldham and in Aberdare, 16·1 in Barnsley, and 17·3 in South Shields. The principal epidemic diseases caused 177 deaths, which corresponded to an annual rate of 0·5 per 1000, and comprised 93 from infantile diarrhœa, 40 from diphtheria 21 from measles, 12 from whooping-cough, 8 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 2·2 in Merthyr Tydfil, but the mortality from the remaining diseases showed no marked excess in any of the towns. There were 2106 cases of scarlet fever and 1413 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 2027 and 1469 respectively at the end of the previous week. The causes of 30 of the 3226 deaths in the 96 towns were uncertified, of which 7 were registered in Birmingham and 3 each in Coventry, Liverpool, and Barrow-in-Furness.

[1] Health and Physique of School Children, 1913.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 11·6, 11·2, and 11·1 in the three preceding weeks, rose to 12·3 per 1000. The 297 deaths in Glasgow corresponded to an annual rate of 13·9 per 1000, and included 17 from infantile diarrhœa, 7 from whooping-cough, 5 from small-pox, 2 each from measles and scarlet fever, and 1 from diphtheria. The 74 deaths in Edinburgh were equal to a rate of 11·3 per 1000, but included no death from any of the principal epidemic diseases.

*Irish Towns.*—The 104 deaths in Dublin corresponded to an annual rate of 13·1, or 0·3 per 1000 below that recorded in the previous week, and included 3 from infantile diarrhœa and 2 from diphtheria. The 107 deaths in Belfast were equal to an annual rate of 13·5 per 1000, and included 2 each from enteric fever and infantile diarrhœa, and 1 from measles.

## VITAL STATISTICS OF LONDON DURING JULY, 1920.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease, it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 6·5 per 1000 of the population, estimated at 4,358,309 persons; in the three preceding months the rates had been 6·7, 6·3, and 6·0 per 1000. Among the metropolitan boroughs the lowest rates from these diseases last month were recorded in Chelsea, the City of Westminster, Hampstead, Holborn, the City of London, and Camberwell; and the highest in Fulham, Finsbury, Bethnal Green, Stepney, and Greenwich. The prevalence of scarlet fever was somewhat greater than in the preceding month; this disease was proportionally most prevalent in Fulham, Bethnal Green, Stepney, Bermondsey, and Greenwich. The Metropolitan Asylums Hospitals contained 1940 scarlet fever patients at the end of the month, against 1795, 1671, and 1674 at the end of the three preceding months; the weekly admissions averaged 284, against 223, 228, and 251 in the three preceding months. Diphtheria was slightly less prevalent than in June; the greatest prevalence of this disease was recorded in Paddington, Fulham, Shoreditch, Bethnal Green, Poplar, and Battersea. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1937, 1783, and 1590 at the end of the three preceding months, further fell to 1470 at the end of July; the weekly admissions averaged 179, against 221, 214, and 189 in the three preceding months. The prevalence of enteric fever was considerably higher than in the preceding month; of the 43 cases notified during the month 6 belonged to Kensington, 6 to St. Marylebone, 4 to Fulham, 3 to Islington, and 3 to Lewisham. There were 24 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 29, 18, and 19 at the end of the three preceding months; the weekly admissions averaged 6, against 4, 3, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in St. Marylebone, Hampstead, Holborn, Finsbury, Bethnal Green, and Southwark. The 10 cases of cerebro-spinal meningitis included 2 in Wandsworth, while of the 7 cases of poliomyelitis 2 belonged to Lambeth.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended July 31st the deaths of 3203 London residents were registered, equal to an annual rate of 9·6 per 1000; in the three preceding months the rates had been 15·4, 12·4, and 10·3 per 1000. The death-rates ranged from 6·8 in Hampstead, 7·7 in Fulham, 7·8 in Hammersmith, 7·8 in Woolwich, 8·4 in the City of London, and 8·4 in Wandsworth, to 11·2 in Chelsea, 11·4 in Bermondsey, 11·5 in Poplar, and 11·6 in Shoreditch, in Bethnal Green, and in Stepney. The 3203 deaths from all causes included 192 which were referred to the principal infectious diseases; of these, 34 resulted from measles, 9 from scarlet fever, 44 from diphtheria, 18 from whooping-cough, 4 from enteric fever, and 83 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded last month in Holborn or in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Hammersmith, Fulham, Hampstead, and Greenwich; and the highest in Kensington, Stoke Newington, and Deptford. The 34 deaths from scarlet fever were 37 below the average in the corresponding period of the five preceding years; this disease was proportionally most prevalent in Kensington, Hammersmith, Hackney, Stepney, Poplar, and Battersea. The 9 fatal cases of scarlet fever were 5 fewer than the

### ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JULY, 1920.

(*Specially compiled for* THE LANCET.)

| CITIES AND BOROUGHS. | Estimated civil population, 1919. | Notified Cases of Infectious Disease. | | | | | | | | | | | Deaths from Principal Infectious Diseases. | | | | | | | | Deaths from all causes. | Death-rate per 1000 living. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other continued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Poliomyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping-cough. | Enteric fever. | Diarrhœa and enteritis (under 2 years). | Total. | Annual rate per 1000 persons living. | | |
| LONDON | 4,358,309 | — | 1168 | 747 | — | 43 | — | 29 | 172 | 10 | 7 | 2176 | 6·5 | — | 34 | 9 | 44 | 18 | 4 | 83 | 192 | 0·6 | 3203 | 9·6 |
| *West Districts:* | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington | 143,938 | — | 27 | 33 | — | 2 | — | — | 5 | — | 1 | 68 | 6·2 | — | 1 | — | 2 | — | — | 3 | 6 | 0·5 | 104 | 9·4 |
| Kensington | 157,886 | — | 47 | 16 | — | 6 | — | 1 | 1 | 1 | — | 72 | 5·9 | — | 3 | — | 2 | 1 | — | 5 | 11 | 0·9 | 124 | 10·2 |
| Hammersmith | 130,981 | — | 28 | 20 | — | — | — | 2 | 3 | — | — | 53 | 5·3 | — | 2 | — | 1 | — | — | — | 3 | 0·3 | 78 | 7·8 |
| Fulham | 152,543 | — | 52 | 48 | — | 4 | — | 2 | 6 | 1 | — | 113 | 9·7 | — | — | — | 1 | — | — | — | 1 | 0·1 | 90 | 7·7 |
| Chelsea | 60,573 | — | 6 | 4 | — | 1 | — | — | — | — | — | 11 | 2·4 | — | — | — | 1 | — | — | 1 | 2 | 0·4 | 52 | 11·2 |
| City of Westminst'r | 127,533 | — | 30 | 9 | — | 1 | — | — | 4 | — | — | 44 | 4·5 | — | 1 | — | 1 | — | — | 2 | 4 | 0·4 | 86 | 8·8 |
| *North Districts:* | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone | 97,953 | — | 23 | 5 | — | 6 | — | 1 | 5 | 1 | — | 41 | 5·5 | — | 1 | 1 | — | 1 | — | 1 | 4 | 0·5 | 81 | 10·8 |
| Hampstead | 88,012 | — | 11 | 4 | — | 1 | — | — | 5 | — | 1 | 22 | 3·3 | — | — | — | — | — | — | 2 | 2 | 0·3 | 46 | 6·8 |
| St. Pancras | 219,434 | — | 51 | 35 | — | — | — | 1 | 11 | — | — | 98 | 5·8 | — | 2 | 1 | 2 | 1 | — | 6 | 12 | 0·7 | 155 | 9·2 |
| Islington | 323,034 | — | 76 | 67 | — | 3 | — | 3 | 9 | — | — | 158 | 6·4 | — | 4 | — | 3 | — | — | 4 | 11 | 0·4 | 239 | 9·6 |
| Stoke Newington | 50,954 | — | 11 | 9 | — | 1 | — | 1 | 1 | — | — | 23 | 5·9 | — | — | — | 3 | — | — | 2 | 5 | 1·3 | 39 | 10·0 |
| Hackney | 216,736 | — | 64 | 23 | — | — | — | 1 | 4 | — | — | 92 | 5·5 | — | 3 | — | 2 | 1 | — | 5 | 11 | 0·7 | 159 | 9·6 |
| *Central Districts:* | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn | 38,156 | — | 4 | 3 | — | 2 | — | — | 2 | — | 1 | 12 | 4·1 | — | — | — | — | — | — | — | — | — | 28 | 9·6 |
| Finsbury | 75,291 | — | 19 | 11 | — | 1 | — | 1 | 19 | — | — | 51 | 8·8 | — | — | — | — | — | — | 3 | 3 | 0·5 | 56 | 9·7 |
| City of London | 13,893 | — | 2 | 1 | — | — | — | — | — | — | — | 3 | 2·8 | — | — | — | — | — | — | — | — | — | 9 | 8·4 |
| *East Districts:* | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch | 98,134 | — | 19 | 22 | — | 1 | — | 2 | 5 | — | 1 | 50 | 6·6 | — | — | — | — | — | — | 5 | 5 | 0·7 | 87 | 11·6 |
| Bethnal Green | 110,085 | — | 64 | 41 | — | — | — | — | 9 | — | — | 114 | 13·5 | — | — | 1 | — | — | — | 6 | 7 | 0·8 | 98 | 11·6 |
| Stepney | 232,506 | — | 156 | 34 | — | — | — | 1 | 12 | 1 | — | 204 | 11·4 | — | 3 | 1 | 1 | 2 | — | 8 | 15 | 0·8 | 207 | 11·6 |
| Poplar | 153,644 | — | 36 | 37 | — | 1 | — | — | 4 | 1 | — | 79 | 6·7 | — | 2 | 1 | 2 | 1 | — | 3 | 9 | 0·8 | 136 | 11·5 |
| *South Districts:* | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark | 179,971 | — | 40 | 32 | — | — | — | 2 | 12 | — | — | 86 | 6·2 | — | 2 | — | 3 | 1 | 1 | 4 | 11 | 0·8 | 146 | 10·6 |
| Bermondsey | 124,239 | — | 43 | 17 | — | — | — | 1 | 3 | 1 | — | 65 | 6·8 | — | 1 | — | 1 | 1 | — | 3 | 6 | 0·6 | 109 | 11·4 |
| Lambeth | 282,322 | — | 84 | 46 | — | 1 | — | — | 6 | — | 2 | 139 | 6·4 | — | 1 | 1 | 4 | 1 | — | 2 | 9 | 0·4 | 189 | 8·7 |
| Battersea | 159,316 | — | 31 | 40 | — | — | — | 4 | 1 | 1 | 1 | 78 | 6·4 | — | 3 | 1 | 2 | 2 | — | 2 | 10 | 0·8 | 115 | 9·4 |
| Wandsworth | 333,693 | — | 63 | 70 | — | 2 | — | 2 | 11 | 2 | — | 150 | 5·9 | — | 2 | 1 | 1 | 1 | — | 5 | 10 | 0·4 | 215 | 8·4 |
| Camberwell | 273,802 | — | 49 | 37 | — | 2 | — | 1 | 14 | — | — | 103 | 4·9 | — | 1 | — | 4 | 2 | 1 | 5 | 13 | 0·6 | 203 | 9·7 |
| Deptford | 111,205 | — | 29 | 23 | — | 2 | — | — | 3 | — | — | 57 | 6·7 | — | 1 | — | 4 | 1 | 2 | 2 | 10 | 1·2 | 81 | 9·5 |
| Greenwich | 98,484 | — | 33 | 17 | — | 2 | — | — | 5 | — | — | 57 | 7·5 | — | 1 | — | — | — | — | — | 1 | 0·1 | 72 | 9·5 |
| Lewisham | 167,754 | — | 42 | 17 | — | 3 | — | 2 | 6 | 1 | — | 71 | 5·5 | — | — | 1 | 3 | — | — | 3 | 7 | 0·5 | 117 | 9·1 |
| Woolwich | 136,237 | — | 28 | 26 | — | 1 | — | 1 | 6 | — | — | 62 | 5·9 | — | — | — | 1 | 2 | — | 1 | 4 | 0·4 | 82 | 7·8 |
| Port of London | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

* Including membranous croup.

average. The 44 deaths from diphtheria exceeded the average by 6; the greatest proportional mortality from this disease occurred in Chelsea, Stoke Newington, Southwark, Deptford, and Lewisham. The 18 fatal cases of whooping-cough were 31 below the average; of these deaths, 2 belonged to each of the boroughs of Stepney, Battersea, Wandsworth, and Woolwich. Four deaths from enteric fever were registered during the month, against an average of 7; of these deaths, 2 belonged to Deptford. The 83 fatal cases of infantile diarrhœa were 23 in excess of the average; the greatest proportional mortality from this disease occurred in Kensington, Stoke Newington, Finsbury, Shoreditch, Bethnal Green, and Stepney. In conclusion, it may be stated that the aggregate mortality in London during July from these principal infectious diseases was 19·7 per cent. below the average in the corresponding period of the five preceding years.

# The Services.

### ROYAL NAVAL MEDICAL SERVICE.

Surg. Cmdr. C. H. Rock is placed on the retired list at own request.

Surg. Lieut.-Cmdr. E. St. G. S. Goodwin is appointed to the *Blake*.

### ROYAL ARMY MEDICAL CORPS.

Major and Brevet Lieut.-Col. H. J. Crossley relinquishes the acting rank of Lieutenant-Colonel.

Capt. J. R. Hayman, from Spec. Res., to be Captain.

Temp. Capts. W. D. Arthur, E. J. Mannix, to be Captains.

The undermentioned late Captains, R.A.M.C., Spec. Res., to be temporary Captains: D. B. Robertson, H. A. Hill, W. H. Simmons, D. E. Hearn.

Temp. Capt. M. J. Whelton to be Lieutenant and to be temporary Captain.

Officers relinquishing their commissions:—Temp. Lieut.-Col. J. R. Lord (on ceasing to serve with the Horton War Hospital, and retains the rank of Lieutenant-Colonel); Temp. Capt. W. L. English. Temporary Captains retaining the rank of Captain: J. T. Bleasdell, R. J. Aherne, C. E. Hibbard, L. H. Woods, D. Mitchell.

*Overseas Force.*

S. T. Mackay and V. B. Ditcham relinquish their commissions on ceasing to be employed as Dental Surgeons and retain the rank of Captain.

### TERRITORIAL FORCE.

Major J. W. Bird and Capt. H. Seddon resign their commissions and are granted the rank of Lieutenant-Colonel.

Capts. R. Armstrong and R. C. Neill resign their commissions and are granted the rank of Major.

Capts. A. H. Brewer, A. C. C. Lawrence, and C. C. Lavington resign their commissions and retain the rank of Captain.

1st London General Hospital: Capt. W. B. Ainger resigns his commission and retains the rank of Captain.

### TERRITORIAL FORCE RESERVE.

Major C. B. Whitehead, from General List, to be Major.

Capt. W. F. Munro to be Major.

Lieut. H. C. Mee, from North Midland Divisional Train, to be Lieutenant.

### ROYAL AIR FORCE.

Flight Lieut. J. H. Porter (Medical) is granted a permanent commission in the rank stated.

### INDIAN MEDICAL SERVICE.

The King has approved the grant of the honorary rank of Lieutenant-Colonel in the Indian Medical Service to Dr. Suresh Prasad Sarbadhikari.

The King has approved the retirement of Lieut.-Cols. E. A. W. Hall, F. W. Gee, and W. D. Hayward.

Captains to be temporary Majors: A. F. Babonau, W. M. Lupton, J. B. Lapsley, J. C. Bharucha.

The King has approved the relinquishment of temporary rank by Temp. Capts. Sailendra Nath Chandra and Surapati Ghosh.

PRESENTATION TO DR. W. L. H. DUCKWORTH.—Last week the large theatre of the Cambridge School of Anatomy was the scene of an interesting presentation to Mr. W. L. H. Duckworth, M.A., M.D., D.Sc., senior demonstrator in anatomy, on the completion of 21 years of devoted service to the University as lecturer in physical anthropology. This tribute to the esteem and affection in which he is held was the spontaneous desire of every demonstrator, assistant, and student to contribute to some token of their appreciation of their chief's unfailing courtesy and sympathy, which have made him one of the most approachable and popular of teachers. The presentation took the form of an inscribed silver salver, and was handed to Dr. Duckworth, together with a book containing the signatures of 220 subscribers, by Dr. D. Reid on August 13th in the presence of the staff and students of the anatomy department. In addition to his brilliant academic qualities Dr. Duckworth has shown great capacity for organisation, especially during the past year, when the chair of anatomy has been vacant and the entire control of the anatomy department has devolved upon him.

# Correspondence.

"Audi alteram partem."

## THE TEST FOR OCCULT BLOOD IN THE STOOLS.

*To the Editor of* THE LANCET.

SIR,—The examination of the stools for occult blood has always the disquieting accompaniment that although a negative result is unequivocal evidence of the absence of blood throughout the alimentary tract, a positive result, especially a comparatively feeble one, introduces the doubt whether an ulcerated lesion of the stomach or intestine is actually present or whether the result may not be due to the fortuitous introduction of hæmoglobin, either from food or from blood itself arising from the naso-pharynx, the mouth, or from hæmorrhoids.

Whilst, however, all clinicians are agreed upon the necessity of eliminating the former possibility by insistence upon a hæmoglobin-free diet for at least three days preceding the test, it does not appear to be a point of universal agreement how far it is possible satisfactorily to exclude all sources of minute hæmorrhages or, from an equally practical standpoint, what degree of such hæmorrhage may be neglected. I am encouraged to raise this question by a statement in Dr. R. Coope's article in your issue of August 7th. He says: "Patients who use hard toothbrushes or who have a habit of sucking their gums often give the reaction for occult blood in the stools." It is, of course, beyond question that the greatest refinement as regards precautions is commendable; and, indeed, in a discussion upon the subject with a well-known chemical pathologist he gave the opinion that the slightest abrasion—even from the passage of an œsophageal tube—would supply sufficient blood to produce a definitely positive reaction in the stools, so sensitive was the benzidine reaction, the test which, like myself, he invariably employed.

My own investigations specifically related to this point certainly do not confirm the idea of an inconveniently exquisite sensitiveness. I lived for a month on a diet free from all hæmoglobin-containing constituents and green vegetables, during which time I ingested measured quantities of my own blood and tested every stool. This investigation was repeated during the war upon a large scale by the administration to patients upon a rigid milk diet of increasing quantities of their own blood. Lieutenant R. M. Mackay, R.A.M.C., working under my directions, embodied the results in a thesis for M.D. Edin., but I do not think the thesis was ever widely circulated, if published at all. The conclusion was that not until 1 c.cm. blood at one dose was taken could we be certain of a positive reaction. One cannot say, of course, if the more frequent ingestion of tiny quantities throughout the day would more easily lead to a positive result—the question of absorption is an important one—but certainly a cubic centimetre of blood is a fairly considerable quantity, and I am prompted to inquire if Dr. Coope or any other observer is really satisfied as the result of crucial tests that small gum abrasions alone have been responsible for a positive result.

I ought to add that whilst these tests were in operation the reagents were regularly tested and results controlled by the use of a solution of blood, whereby it was certain that even up to a dilution of 1 in 300,000 a marked positive reaction was obtained. The circumstance, then, of a negative reaction being possible when as much as $\frac{3}{4}$ c.cm. of blood has been introduced into the stomach hardly suggests that the benzidine test is "too sensitive"; nor, may I add, have I found it unreliable if all precautions with the reagents are taken; whilst its simplicity is a feature which must always make a strong appeal.

I am, Sir, yours faithfully,

ADOLPHE ABRAHAMS.

Park-crescent, Portland-place, W., August 14th, 1920.

## FOOD POISONING FROM PARATYPHOID B INFECTION.

*To the Editor of* THE LANCET.

SIR,—Your annotation last week on the Carrier in Food Poisoning leads me to put on record the following case on account of the importance of bacteriological examination:—

I was called to see J. B., aged 59, on July 19th, suffering from severe diarrhœa and vomiting. Temp. 100° and pulse corresponding. Foul, coated tongue, but no abdominal pain beyond that caused by retching. Physical examination negative except for slight tenderness over stomach and descending colon. Normally a man with systolic pressure bordering on 200 mm. Hg, and therefore frugal in diet. Had retired to rest on previous evening feeling well, but was awakened at 4 A.M. with violent diarrhœa and sickness. He had had his usual diet with the exception of a small piece of cold sausage, which naturally fell under suspicion, but as the rest of the family had partaken of the same food without untoward results no food analysis was undertaken. The vomited matter appeared to be bile and the stools were liquid and almost milky in appearance. The following day he had 11 fluid evacuations during the 24 hours, still the same colour and very offensive. An injection of emetine hydrochlor., gr. ⅛, was given and digalen hypodermically. That evening he seemed better, temp. 98°, pulse stronger, no evacuation of the bowels for four hours. Next morning diarrhœa was constant and the patient in a condition of profound collapse, temp. 95°, pulse almost imperceptible at the wrist, knee-jerks and plantar reflex absent.

Dr. W. H. Willcox was called in consultation and a specimen of fæces was sent to Dr. E. J. Storer, Inoculation Department, St. Mary's Hospital, who reported as follows:—

Macroscopically: Milk-like fluid.
Microscopically: I found débris, few pus cells.
Culturally: Many non-lactose fermenting organisms giving the sugar reactions of the Solmonella group.
Morphologically: Gram-negative motile bacilli; serological reaction. Agglutination: Gaertner serum, 1/20; *B. para. A*, 1/20; *B. para. B*, 1/320; *B. aertrycke*, 1/32.
Sera absorbed with organisms: *B. para. B* serum, 1/25; *B. aertrycke*, 1/160; *B. botulinus* not isolated.
Conclusion: *B. para. B* infection.

A specimen of blood sent to Dr. Knyvett Gordon was returned "paratyphoid B positive in a dilution of 1 in 100."

Energetic stimulant measures were taken, salines were injected freely, oxygen inhalations through spirit, and pituitrin hypodermically. Patient remained gravely ill, with subnormal temperature, weak intermittent pulse, and four or five fluid evacuations a day until the 25th, when his temperature rose to 98° and he had only one semi-solid stool, less offensive and almost normal in colour. Since then his condition has steadily improved.

I had a similar case of paratyphoid B infection with much milder symptoms two months ago in a young adult. In this case there came under suspicion a veal pie, partaken for luncheon at his golf club, and yet on inquiry others who had lunched with him suffered no ill-effects. In the third week he developed a left-sided pleural effusion. These cases must be more common than one is led to believe, and in view of the evidence given by Dr. J. Priestley in the cases that occurred in London recently, the after-care of such patients is of the utmost importance.

I am, Sir, yours faithfully,
W. J. MCKEAND, M.B., Ch.B. Edin.

Compton-terrace, N., August 17th, 1920.

## HERPES AND CHICKEN-POX.

*To the Editor of* THE LANCET.

SIR,—I have read Dr. Claude Ker's paper on Herpes and Chicken-pox in your issue of August 14th with interest. A number of instances of the supposed association of the two conditions have been recorded in *Guy's Hospital Gazette* in the last few years. One enthusiast even went so far as to record that, having diagnosed herpes in a parent, he prophesied successfully that the children would develop chicken-pox. I do not doubt his word; but it is difficult to weigh the evidence of all prophecy, because there are no records of the false ones. I have seen many cases of both diseases without finding any evidence to connect them, except for one patient with typical herpes zoster and a rash indistinguishable from chicken-pox, both present at the same time. The notes were recorded in the above-named gazette. However, there is enough evidence of a possible connexion to make the subject an interesting study; and more figures are needed, as Dr. Ker suggests, which will deal with *all* cases and not lay undue emphasis on the exceptional ones.

There are two points which he does not discuss which might be emphasised. First, from the clinical point of view, is the question of pain; it is a very constant symptom in herpes zoster, and of real practical importance in justifying the diagnosis of herpes if an unusual distribution of chicken-pox were under discussion. The second, much more important and apparently not generally known, is that the cerebro-spinal fluid in herpes zoster shows a marked excess of lymphocytes; several times I have found more than 100 per c.mm. (more than five may be taken as abnormal). The fluid must be examined early, as the lymphocytes soon subside.

I do not know whether any observations of the cerebro-spinal fluid have been made in chicken-pox, but it seems to me that this examination is likely to prove the most important single piece of evidence towards joining or separating the two diseases.

I am, Sir, yours faithfully,
Derby, August 17th, 1920. HUGH BARBER.

# Obituary.

## SINCLAIR WHITE, C.B.E., M.D.R.U.I., F.R.C.S.ENG.,

LIEUTENANT-COLONEL, R.A.M.C.; LATE PROFESSOR OF SURGERY, UNIVERSITY OF SHEFFIELD.

BY the death of Sinclair White Sheffield loses one who has been a prominent figure in medical circles for many years, and latterly has taken a leading part in the affairs of the profession. His early death so soon after retiring from active practice, to enjoy the leisure for which he had worked so hard, is deeply regretted by a wide circle of colleagues and friends. Nearly 40 years ago he went to Sheffield, a stranger, unknown to anybody in the district; there he spent the whole of his active life. A year ago on his retirement his name as a great surgeon was a household word for many miles around, and the calls upon his services were more numerous than he could fulfil.

The story of his life is the old story of what a man can do by his own efforts provided he has brains, courage, and determination. Born in 1858 and graduating in 1879 after a brilliant career as a student at Queen's College, Galway, fate brought him for his first appointment to the Sheffield School of Medicine in the humble capacity of so-called "tutor." Coming as a complete stranger, the first impressions which he received of his new post and its duties could not have been very inviting. The School of Medicine was at that time about at its lowest ebb. Other schools had begun to develop on new lines, but for some years the medical school in Surrey-street remained as an example of the old medical schools of the period which Dickens described. Dark and dismal, it consisted of an anatomical theatre upstairs, leading out of a dissecting room with sawdust on the floor and an appearance of something between a stable and a dirty butcher's shop; whilst downstairs there was a musty old library and a so-called students' room in which the porter also prepared "bone specimens." In this room the students spent much of their time sitting round the fire, smoking. It was not exactly a healthy atmosphere. The "tutor" was the only paid teacher, and his duties included taking charge of the dissecting room, holding tutorial classes in anatomy and physiology, and generally superintending everything. For these varied functions a stipend of £100 per annum was paid. In the case of many men such surroundings would have either frightened them away or broken their spirit, but White was not of that kind. He set to work to make the best of it, and in helping the students helped himself to get the Primary Fellowship.

In course of time he became a resident at the Public Hospital and Dispensary (now the Royal Hospital), and, whilst there, took his Final Fellowship in 1884. His ability and energy soon brought him into favourable notice with the board and the staff, so that on completing his period of service he had no difficulty in getting recommended for the post of medical officer of health of Sheffield, which was then vacant. He entered upon the duties of his new post with vigour and zeal, and soon proved himself a public servant of exceptional value to the corporation. Of his work in that capacity deserve particular mention his important and fruitful researches upon "The Action of the Sheffield Water on Lead Piping and its Effects on the Health of the Community." The results of this work were of immediate practical value, and brought about a complete cessation of lead poisoning from water in the district. Apart from its technical side, there is no doubt that the tenure of this post afforded him many and varied experiences of business methods and general knowledge of all kinds which proved of value in his later career. It is obvious, however, that even at this stage of his life his aim was to become an operating surgeon, and that he was only holding the post of medical officer of health in order to keep going until opportunity offered itself.

After a few years he resigned this post to take up general practice in the west-end. His first surgical appointment was in connexion with the Sheffield Hospital for Sick Children, which was followed in the early "nineties" by his appointment to the Royal Hospital. Up to this time he continued his general practice, and it is probable that the amount of operative surgery which he obtained outside his hospital duties was not very great. It was not until a few years later that the real opportunity for which he had been waiting and preparing himself arose. A series of vacancies amongst the senior members of the Royal Infirmary staff having arisen rather rapidly, White was invited to join the staff as surgeon. From that time onwards his career as an operating surgeon progressed by rapid strides, and for many years, practically up to the time of his retirement, his surgical life was an extremely full one. Few men worked harder or spared themselves less. As a surgeon he was undoubtedly a master of his craft, with a sound and ripe judgment, courageous and resourceful, untiring and undismayed by difficulties. Outside his own wide sphere of operations, he was less well known than he deserved to be, and his name was less familiar than that of many whose ability was no greater. This is easily explained by the circumstances of his career. During the "writing" period of his life he had not the surgical opportunities; when the surgical experience offered itself he was too busy to write! Such few surgical writings as he published were all valuable contributions to practical knowledge, but he was not a writing man.

His connexion with teaching, which began as tutor at the medical school, was kept up almost without intermission, and culminated in the professorship of surgery, accepted in 1911, which he resigned only two years ago. As a lecturer he was not at his best. Speaking in public was always distasteful to him. He did not cultivate it, and anything in the nature of lecturing was an effort. In medical affairs, both local and general, he was deeply interested and took an active part, being secretary of the British Medical Association when it visited Sheffield in 1908, and later, on the death of the President (Professor Simeon Snell), occupying the presidential chair for the remainder of the year. He also held the posts of President of the Sheffield Medico-Chirurgical Society and of the Yorkshire Branch of the B.M.A. During the war his services in connexion with the 3rd Northern General Hospital were very strenuous. His work as medical officer in charge of the surgical department, and later as officer in charge of the hospital, undoubtedly hastened the breakdown which ended his life. Even before the armistice his health broke down, and a somewhat serious operation left him very much shaken. For his military services he was made a Commander of the British Empire.

Of his personality it is somewhat difficult to speak, for he was a reserved man really known only to very few. His manner was somewhat brusque and the kindness which lay behind it was not always allowed to be seen. Those, however, who had the privilege of really knowing him, whether as colleagues, patients, or personal friends, realised that there was a kind heart behind the outward manner, and that in all things he was generous, straightforward, and conscientious.

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## JAMES HERBERT RHODES, M.B. LOND., M.R.C.P.

Dr. J. H. Rhodes, who died in London on August 5th after a long and trying illness suffered with excellent fortitude, was born at Kendal in 1874. He took his medical course at St. Bartholomew's Hospital, qualifying in 1899, and becoming house physician to Sir Lauder Brunton, with whom he conducted a research on the presence of glycolytic ferment in muscle. Brunton then expressed his appreciation of the powers of keen insight along with patient and persevering work shown by his junior colleague. After four years as senior resident medical officer at the London Temperance Hospital Dr. Rhodes became officer in charge of the electrical department there and honorary physician to the Farringdon General Dispensary and Lying-in Charity. He was also consulting radiographer to the Royal Eye Hospital. Unfitted by his health for service abroad, Dr. Rhodes during the war was medical officer in charge of the Queen's Gate Red Cross Hospital and the electrical department at Lewisham Military Hospital.

In October, 1914, however, hearing that there was no X ray outfit in working order at Boulogne or its neighbourhood, he went out on behalf of the British Red Cross Society to see what he could do, taking with him two outfits and finding in seven hospitals either no apparatus or the apparatus unworkable. He was happy to see five hospitals fitted up with X ray apparatus in working order within a month and arrangements made in regard to two others. Since 1904 he had been in practice in South Kensington, latterly being occupied largely with the practice of artificial pneumothorax, in which he was specially interested.

One of his professional colleagues writes: Rhodes was undoubtedly one of the best types of general practitioner. An all-round knowledge of the scientific sides of medicine and surgery combined with an expert equipment in electrical work and in tuberculosis, these were only one side of his qualifications. On the other was a conscientiousness which refused to allow him to spare himself. With him the interest of the patient came before everything else, and this fact was so patent that it earned for him in no ordinary degree the affectionate regard of those who came under his care. Scrupulously sensitive in his relations with brother practitioners, he kept the spirit as well as the letter of a lofty ethical code. Thorough and painstaking, he was also modest and self-effacing to a degree, but with better health he would have attained great success as a London general practitioner.

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## JAMES KING KERR, M.D. Q.U.I., J.P.

Dr. Kerr, who died on August 10th at Belfast in his seventy-fifth year, was well known as a medical practitioner and esteemed as a citizen. He had long been suffering from diabetes, but continued to take an active part in public affairs. A native of county Antrim, he was born near Randalstown, studied at the Royal Academical Institution and at Queen's College, Belfast, graduating M.D. of the old Queen's University of Ireland in 1871. He then acquired a practice at Leytonstone, remaining there until his health broke down from overwork, when, after a voyage to China, he settled in practice at Knock, in the suburbs of Belfast. His public life began by unsuccessfully contesting a Parliamentary seat in county Antrim in 1900 as an independent Conservative. He entered the Belfast Corporation, where he rose to be an alderman and, in 1904, chairman of the Public Health Committee, and subsequently he became chairman of the Hospitals and Dispensaries Committee. He was a justice of the peace for Belfast and a governor of Campbell College. He is survived by a widow.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### MINISTRY OF HEALTH (MISCELLANEOUS PROVISIONS) BILL.

SOME highly important questions of medical interest are dealt with in the Ministry of Health (Miscellaneous Provisions) Bill, which Dr. ADDISON, the Minister of Health, presented in the House of Commons on Monday, August 16th.

*Incipient Mental Disorder.*

Clause 10 relates to treatment for incipient mental disorder. It sets out that—

"(1) Notwithstanding the provisions of any Act, a person shall not, if the required conditions are complied with, be liable to any penalty for receiving to board, lodging, or taking charge of for a period not exceeding six months, or such longer period not exceeding in all 12 months, as may be approved by the Minister, and whether for payment or not, any person suffering from mental disorder which is incipient in character and of recent origin, but not being a person who has been certified as a lunatic under the Lunacy Acts, 1890 to 1911, or in respect of whom an order has been made under the Mental Deficiency Act, 1913. Provided that nothing in this section shall authorise any person who has been received into any institution, home, or house under this section to be detained therein if he delivers to the superintendent or other person, by whatever name called, having the charge of the institution, home, or house, or sends by post to the Minister, notice in writing that he desires to be discharged therefrom.

(2) The required conditions for the purposes of this section are as follows: (*a*) The institution, home, or house in which the person is received must be approved for the purposes of this section by the Minister. (*b*) No such person shall be received into the institution, home, or house except with his previous consent in writing and except on a certificate in writing by two duly qualified medical practitioners to the effect that that person is reasonably likely to benefit by treatment therein. (*c*) The superintendent or other person, by whatever name called, having charge of the institution, home, or house, shall on the demand of any person having authority to inspect the institution, home, or house produce all such written consents and certificates as aforesaid. (*d*) The reception under this section of any person into the institution, home, or house shall be reported to the Minister by the superintendent or other person aforesaid.

(3) Any institution, home, or house approved by the Minister under this section shall be periodically inspected by officers appointed for that purpose by the Minister.

(4) The Minister may make regulations for the purpose of carrying this section into effect."

The maximum penalty for a contravention of the section is a fine of £100 or imprisonment for six months, or both fine and imprisonment.

*Hospitals on the Rates.*

Clause 11 confers on county councils the power to provide hospitals and ambulances. The main part of the clause is in the following terms:—

"(1) The council of a county shall have power (*a*) to supply and maintain hospitals (including out-patient departments) for the treatment of illnesses and diseases generally, or for the treatment of any particular illness or disease, or any particular class of illnesses or diseases; and (*b*) to contribute, on such terms and conditions as may be approved by the Minister, to any voluntary hospitals or similar institutions within their area; and (*c*) to undertake the maintenance of any Poor-law hospitals or infirmaries within their area; and (*d*) to establish and maintain, or to contribute towards the cost of or otherwise aid in establishing or maintaining, an ambulance service for dealing with cases of accident or illness within their area.

(2) The councils of two or more counties may, with the consent of the Minister and subject to such conditions as he may prescribe, combine for the purposes of supplying and maintaining hospitals under this section, and where any councils so combine they may appoint a joint committee under Section 81 of the Local Government Act, 1888, and that section shall have effect accordingly.

(3) Section 132 of the Public Health Act, 1875 (which gives powers to recover the cost of the maintenance in hospital of a person who is not a pauper), shall apply to any patient who has received treatment in a hospital maintained by the council of a county under this section, and the council shall have the same power of recovering expenses as is given to a local authority under that section."

The expression "council of a county" includes the council of a county borough.

Clause 12 lays down that no person shall sell, supply, or deliver any clinical thermometer unless it has been tested, approved, and marked in accordance with regulations made by the Minister.

Certain amendments are proposed in enactments relating to the sale of food and drugs.

Clause 14 permits a port sanitary authority, with the approval of a Secretary of State and of the Minister, to authorise the medical officer of health of the authority to perform any duties in connexion with the medical inspection of aliens landing or desiring to land within the area.

## HOUSE OF LORDS.

### TUESDAY, AUGUST 10TH.

*Dangerous Drugs Bill.*

The Dangerous Drugs Bill was read a third time and passed.

### WEDNESDAY, AUGUST 11TH.

*Blind Persons Bill.*

The Blind Persons Bill was read a third time and passed.

## HOUSE OF COMMONS.

### WEDNESDAY, AUGUST 11TH.

*National Health Insurance Valuation.*

Mr. CAUTLEY asked the Minister of Health if he would state when the valuation of the National Health Insurance Societies was likely to be completed.—Dr. ADDISON replied: The separate valuation of each of the 12,000 Approved Societies and branches which administer National Health Insurance is a task of immense magnitude. The work is being proceeded with under the supervision of the Government actuary, and very satisfactory progress is being made, but it will be some months before a general announcement of the results can be made.—Mr. CAUTLEY: Is it not possible to give some approximate date?—Dr. ADDISON: I am afraid it will not be before the end of the year at the earliest.

*A Standard for Condensed Milk.*

Mr. GRATTAN DOYLE asked the Minister of Health if he could now state what progress had been made by the committee set up to inquire into the determination of a standard for condensed milk; if he would take immediate steps to prevent the importation or manufacture of condensed milk with low standards of fat, to the great detriment of the consumer; if the committee had yet reported; and, if not, if he would state the reasons for the delay.—Dr. ADDISON replied: I understand that the committee hope to present their report to me very shortly. The matter will then have my careful attention.—Mr. HOWARD GRITTEN: May I ask when the right honourable gentleman proposes to proceed with the Milk [and Dairies Bill, and whether there is not a good deal of opposition to it in the country?—Dr. ADDISON: I am aware that there is considerable interested opposition to one clause. We certainly hope to proceed with the Bill at the first possible opportunity.

*Third London General Hospital, Wandsworth.*

Mr. CLYNES asked the Minister of Health whether he could make any statement as to the present position regarding the Third London General Hospital, Wandsworth.—Dr. ADDISON replied: I have made every effort to secure the retention of this hospital for the use of the civilian population, but I have ascertained that the site of the hospital is held by the London County Council on trust for the purpose of an open space; that it was acquired by them before the war for that purpose from the Royal Patriotic Fund Corporation at less than market value in consideration of the use to which it was to be put; and that the Royal Patriotic Fund Corporation object to its use for a civilian hospital, and urge that the conditions on which the land was sold must be adhered to. Moreover, I understand that part of the price paid for the land was subscribed locally and that there is strong opposition to the land being diverted from use by the public as an open space. I am advised that legislation would be necessary in order to secure the retention of the hospital on its present site, and in the circumstances I do not think that Parliament would be willing to give the necessary powers. I have therefore regretfully come to the conclusion that I must abandon my efforts to obtain the use of the hospital on its present site for the civilian population.

*Ventilation of Factories, Schools, and Coal-mines.*

Major Sir KEITH FRASER asked the Minister of Health if he would take steps to improve the ventilation of the factories and schools in Leicestershire with a view of checking the increase of tuberculosis in that area; and would he consider a better system of ventilating the coal-mining levels than that which existed at present.—Dr. ADDISON replied: The number of notifications of tuberculosis in Leicestershire has diminished from 524 in 1914 to 364 in 1919. I am glad to state that this decrease is general throughout the country, the corresponding figures for England and Wales being 95,808 in 1914 and 74,647 in 1919. Questions as to the ventila-

tion of factories and coal-mining levels and of schools should be addressed to my right honourable friends the Home Secretary and the President of the Board of Education respectively.

*Poor-law Reform Promised.*

Mr. GILBERT asked the Minister of Health whether the Government proposed to bring in any legislation during the present Parliament dealing with the reform of the Poor-law and in any way altering the composition of the bodies which now administered the existing laws.—Dr. ADDISON replied in the affirmative.

*Injurious Foreign Potable Spirits.*

Colonel GRETTON asked the Minister of Health if he was aware that many complaints and allegations had been made of the bad quality and injurious results arising from the consumption of certain imported potable spirits; if the Ministry had taken any steps to test the truth or otherwise of such statements; if the Ministry had powers under the Food and Drugs Act to condemn imported potable spirits of bad quality; and, if so, had such powers ever been used.—Dr. ADDISON replied: Inquiries have been instituted into the allegations referred to, and I should be happy to consider any specific information in the honourable and gallant Member's possession. Under the Sale of Food and Drugs Acts the vendor of any article of food or drink which is either injurious to health or not of the nature, substance, and quality demanded is liable to prosecution. The Acts are administered by local authorities, and the Ministry of Health have no powers of condemnation.

*A Hardship to Limbless Officers.*

Colonel GREIG asked the Minister of Pensions whether, owing to the hardship caused by Army Council Instruction 326, of 1920, 2 (a), to limbless officers whose stumps were not sufficiently healed for an artificial leg or arm to be fitted in the time therein allowed, he would specially supplement their disability pensions until such limbs were fitted, so that it might amount to as much as their Service pay.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: When an officer, who has been demobilised, is waiting to be fitted with an artificial limb and is unable to provide for his own support he may be granted, from the Ministry, disability retired pay at the maximum rate during the waiting period, and I have no authority to make any larger allowances.

*Inferior Drugs and Dressings in India.*

Mr. SPOOR asked the Secretary of State for India whether his attention had been drawn to the circular letter issued on Sept. 15th, 1919, by the Government of India (Indian Munitions Board) to the various local governments and administrations in India concerning the drugs and surgical dressings required by the forces in the field supplied to Government by a firm of chemists in Bombay, and stating that the drugs were so adulterated and the dressings so medicated and otherwise below the represented quality as to imperil the lives of soldiers; that this was done deliberately by the firm in question to swell its own profits; that the name of the firm had therefore been removed from the Government of India list of contractors, and recommending that it should be removed from the lists of contractors to the provincial governments; whether, in communicating this information to the public through the press, the name of the firm in question was suppressed and was still being withheld, and why; whether he would communicate the name of this firm to the House and explain the reasons of the Government of India for their failure to prosecute the directors or managing directors, or both; and whether he would direct that such prosecution should take place.—Mr. MONTAGU replied: I have no information on the matter to which the honourable Member refers, but I will inquire.

MONDAY, AUGUST 16TH.

*Travelling Facilities to Men under Treatment.*

Colonel ASHLEY asked the Minister of Pensions whether any facilities could be given to wives to visit their husbands while undergoing treatment away from home when the treatment was prolonged and the man's condition prevented him travelling; and whether, in view of the hardship otherwise involved, he would consider the question of granting such facilities.—Major TRYON replied: Under the present regulations of the Ministry a man undergoing treatment in an institution away from home may be provided with a half-fare railway ticket to enable him to visit his home after each three months' treatment, or alternatively with a full-fare ticket after each six months' treatment. I am satisfied that there is hardship where a married man is not sufficiently convalescent to visit his home, and is therefore debarred from benefiting by the concession. I am glad to be able to say that arrangements have now been sanctioned under which the free travelling privileges now granted to the man during treatment in an institution can, in future, be transferred to his wife when the husband's condition does not admit of his travelling home.

*The London University Site.*

Mr. GILBERT asked the Chancellor of the Exchequer whether, having regard to the fact that the Government did not propose to proceed with the purchase of the Bloomsbury site for the University of London unless and until the University accepted the offer, and having regard to the report of the valuer of the London County Council as to the relative value of certain sites and the present inability of the Government to offer any contribution towards the erection of the required buildings on the Bloomsbury site, he would hold over the purchase money for the site to be devoted to such purposes, subject to the approval of the Government, as the Senate of the University might recommend as most serviceable for the recognised object of the University, and for the furtherance of university education in London as the metropolis of the British Empire.—Mr. BALDWIN (Financial Secretary to the Treasury) replied: No, Sir. For the reasons which I gave on Tuesday last the offer of the Government relates only to the Bloomsbury site.

*Facilities for Transfer to Ordinary Hospitals.*

Mr. BRIANT asked the Secretary for the Home Department whether he would consider the desirability of further facilities for the transfer of sick prisoners to ordinary hospitals.—Mr. SHORTT replied: The powers which already exist and are very freely used for the transfer of sick prisoners to ordinary hospitals are found to be sufficient for the purpose.

*Third London General Hospital, Wandsworth.*

Colonel Sir GODFREY COLLINS asked the Secretary for War if he could state the approximate cost of the Third London General Hospital, Wandsworth; and would he say if this hospital was to be broken up or transferred to either the Ministry of Health or a local authority.—Sir A. WILLIAMSON (Financial Secretary to the War Office) replied: The Third London General Hospital consisted of the Royal Victoria Patriotic School buildings and grounds and a hutted portion on the common adjoining the school. Approximately £69,000 was spent on the hutted portion. During 1919 the school buildings and grounds were surrendered and the hospital concentrated in the hutted portion on the common. The hospital was closed on July 31st last, and is being reported to the Disposal Board as surplus to military requirements. With regard to the latter part of the question I would refer the honourable and gallant Member to the reply given by my right honourable friend the Minister of Health to a similar question asked by the right honourable Member for Platting on Wednesday last.

*Protection of Mentally Defective Persons Bill.*

Mr. WIGNALL presented a Bill to make further provision for the protection of lunatics, idiots, and imbeciles, and other mentally defective persons from sexual immorality and from conduct akin thereto or connected therewith; and for purposes relating to the matters aforesaid. The Bill was read a first time.

# Medical News.

KING'S COLLEGE (UNIVERSITY OF LONDON): PUBLIC HEALTH DEPARTMENT.—At King's College the department of Public Health, recently reorganised under the general supervision of Professor W. J. R. Simpson, now offers complete courses of instruction for the various special degrees and diplomas. Lectures are delivered on hygiene, sanitary law and administration, sanitation, and vital statistics by Dr. D. Sommerville, and on the Food and Drugs Acts by Mr. Rhys Charles. Bacteriology and parasitology are taught by Professor R. T. Hewlett and Dr. F. E. Taylor, and the chemical laboratory work is in charge of Mr. William Partridge. The laboratories are open daily for instruction and research, and arrangements have been made to suit the convenience of those engaged in practice. Weekly demonstrations on sanitary appliances and visits to places of sanitary interest are arranged. A special course on industrial hygiene will be given by Dr. T. M. Legge (October to February), and on school hygiene by Dr. A. J. Malcolm (October to June).

AMALGAMATION OF THE BRISTOL HOSPITALS.—The Bristol General Hospital committee has signified its willingness to enter, on certain conditions, into an amalgamation with other voluntary medical institutions of the city for a period of three years. As has already been stated in THE LANCET, this committee could not see its way to an irrevocable surrender of its trust to a newly constituted comprehensive council, but it considers a trial of three years feasible on condition that its present assets are not pooled with those of the other hospitals, and that the hospital remains a general hospital.

WHITE CLIFF HOSPITAL, TORQUAY.—The Western Hospital, Torquay, was established in 1850 for the treatment of incipient consumption and was supported by voluntary contributions. During the war it was used for the treatment of tuberculous soldiers, and has recently been purchased by the Devon County Council. It will be known in the future as the "White Cliff," and will be used for the treatment of tuberculous patients.

THE LATE Dr. R. G. FENDICK.—Robert George Fendick, late senior surgeon to the Bristol Dispensary, died recently at Eastbourne in his seventy-fifth year. A son of the late Mr. J. Fendick, M.R.C.S., of Bristol, Dr. Fendick was educated at Bristol Medical School, qualified M.R.C.S. in 1867, and practised for many years in Bristol and Clifton, where he was highly esteemed.

DORSET MENTAL HOSPITAL.—Dr. G. E. Peachell, the medical superintendent of this hospital, in his annual report for 1919 states that the institution now accommodates 541 patients from the county of Dorset, 95 from out-county unions, 22 service patients, and 233 private patients. No other county mental hospital has so large a number of private cases, which were very beneficial for the county rates. In alluding to the chief causes of insanity amongst the patients, Dr. Peachell mentions that he has been struck with the few cases in which alcohol appeared to be a factor.

ROYAL CORNWALL INFIRMARY, TRURO. — The medical report presented at the annual meeting of this institution showed that 711 in-patients and 1459 out-patients had been treated. The expenditure was £5947 and the total deficit against the infirmary up to last May was £419. The chairman, Canon Graves, urged the advisability of making a charge to those patients who were able to pay, and the matter was recommended to the governors for consideration. A tender for £13,819 for the renovation and enlargement scheme had been accepted and the work was now proceeding. £9800 had been received in response to the appeal for this purpose, but it is estimated that a sum of £15,000 will be required to meet the total cost.

ROYAL DEVON AND EXETER HOSPITAL.—At a recent meeting of the governors of this hospital it was reported that the cost of the new Victory wing which is to be added to this institution will be about £40,000, towards which £24,000 have been raised. The governors considered that for the better accommodation of the nursing staff it would be advisable to build a second storey on to the Victory wing, at an estimated cost of about £12,000, and this was agreed to by the meeting. It was stated that the patients will have to make contributions towards their cost of maintenance, and a special meeting will be held to consider this question. The president, General Stirling, said that the question of the amalgamation of the hospital with the Exeter Dispensary had been carefully considered, but it was decided that such a scheme was not feasible.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on August 10th, 22 cases were considered, and £244 11*s.* 1*d.* voted to 20 of the applicants. The following is a summary of some of the cases relieved:—

L.S.A. Lond., aged 63, married, who for some years has acted as locum tenens. Has recently completely broken down in health, and is suffering from tabes dorsalis and is in Guy's Hospital. Last year only earned £121. Rent £32 10*s.*, and wife lets an unfurnished room at £11 4*s.* Friends have given £10. No prospect of applicant being able to work again, and they are practically destitute. Voted £26 in 12 instalments.—Daughter, aged 62, of M.R.C.S. Eng. who practised at Bradford, Yorks, and died in 1903. Owing to nervous breakdown applicant has been for some time in a nursing home. Is now staying with friends, who will be unable to keep her. Income £50 from investments. Desirous of getting into a home. Voted £12 in 12 instalments.—Wife, aged 46, of F.R.C.S. Irel. who practised in London. Owing to overwork during the war and financial worry applicant's husband is now completely incapacitated, and it is not expected that he will be able to work again. Three children, aged 23, 20, 10. The eldest, a daughter, earns £3 a week. The son, aged 20, is going to Australia. Rent £115, for 11-roomed house, the lease of which runs out in September, when £300 will be required for dilapidations. A friend has lent the money to pay the rent up to September. Desirous of getting a house and letting rooms, and asks for help to make a start and towards the youngest son's education. Voted £10.—Daughter, aged 56, of M.R.C.S. Eng. who practised at Box and died in 1894. Suffers from ill-health, and is unable to earn anything. Shares everything with her two sisters, one of whom has help from the Fund. Relieved ten times, £132. Voted £12 in 12 instalments.—Daughter, aged 61, of M.R.C.S. Eng. who practised at Leatherhead and died in 1861. Until recently has acted as school matron at £30 a year, but is at present out of employment, and, owing to her age, finds it difficult to obtain another post. Is at present staying with friends. Has no income but that which she earns. Relieved once, £10. Voted £5.

Subscriptions may be sent to the honorary treasurer, Sir Charters J. Symonds, at 11, Chandos-street, Cavendish-square, London, W.1.

ROYAL SANITARY INSTITUTE.—The next Congress of the Royal Sanitary Institute will be held at Folkestone in June, 1921.

THE Wellcome Historical Medical Museum, at 54A, Wigmore-street, London, W., will be closed for cleaning and decoration from Sept. 1st to 30th.

THE LATE DR. C. W. VICKERS.—Charles William Vickers died at Paignton, Devon, on August 1st, in his seventy-third year. Dr. Vickers received his medical education at King's College Hospital and the London Hospital, and after qualifying M.R.C.S. in 1870, practised for a time in London, and came to Paignton for the benefit of his health in 1883. He took his D.P.H. in 1896 and was for 29 years medical officer of health for Paignton. Dr. Vickers was a painstaking medical officer of health, and his work was much appreciated by the residents of Paignton until his recent retirement. About 20 years ago small-pox occurred amongst the men working on the construction of the waterworks, and his energetic methods prevented any spread of the disease. Dr. Vickers leaves a widow and one son.

TECHNICAL PHARMACY.—Courses are now instituted in technical schools to prepare students for the examinations of the Pharmaceutical Society, and the Pharmaceutical Society of Great Britain has decided to divide its qualifying examination into two parts. The subjects of Part I. are Chemistry, Botany, and Physics, and the subjects of Part II., Pharmacy, Materia Medica, and other technical subjects. The society will henceforth require that students who offer themselves for the qualifying examination shall have pursued an approved course of study in an institution approved by the society. A circular from the Board of Education to local educational authorities as well as technical schools points out that the Board is informed that the society recognises and approves, for the purposes of Part I. of its examination, all those institutions which are already recognised by the General Medical Council. Special considerations, however, arise in connexion with Part II. of the examination. The efficient teaching of the subjects of this part of the examination entails considerable expenditure on equipment and stores, and for certain subjects the appointment of a specially qualified teacher. The Board understands that the society has approved courses preparing for Part II. of its examination in nine technical schools and colleges in various parts of the country, and that in these institutions alone provision can be made for 700 students, a number which is largely in excess of the number who annually qualified in pharmacy before the war. In these circumstances the Board does not propose to recognise, under its regulations, any course in the subjects of Part II. of the Pharmaceutical Society's Qualifying Examination, unless the Pharmaceutical Society has previously approved the course for its own purposes.

## BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.
The Course of Operative Surgery. A Handbook for Practitioners and Students. By Professor Dr. V. Schmieden and A. Turnbull, M.B. Glasg. With Foreword by Professor Dr. A. Bier. 2nd ed. Pp. 350. 25*s.*
An Introduction to the Study of Hypnotism, Experimental and Therapeutic. By H. E. Wingfield, M.D. 2nd ed. Pp. 195. 7*s.* 6*d.*

BALE, J., SONS, AND DANIELSSON, London.
The Serbian Epidemics of Typhus and Relapsing Fever, 1915. Their Origin, Course, and Preventive Measures employed for their Arrest. By William Hunter, C.B., Col. A.M.S. Pp. 158. 7*s.* 6*d.*
Gonococcal Infection in the Male. For Students and Practitioners. By N. Lumb, O.B.E., M.B., B.S. Pp. 328. 25*s.*
Military Sanitation. A Handbook for Soldiers. By Col. R. J. Blackham, C.B., C.M.G., C.I.E., D.S.O. 3rd ed. Pp. 140. 10*s.* 6*d.*

CASSELL AND CO., London.
A Handbook of Midwifery. By Comyns Berkeley, M.C., M.D. Cantab. 4th ed., enlarged. Pp. 550. 7*s.* 6*d.*

CHAPMAN AND HALL, London. WILEY, J., New York.
Manual of Psychiatry. Edited by A. J. Rosanoff, M.D. 5th ed. Pp. 684. 22*s.*

CHURCHILL, J. & A., London.
A Manual of Dental Metallurgy. By E. A. Smith, Associate of the Royal School of Mines. 4th ed. Pp. 286. 12*s.* 6*d.*

CONSTABLE AND CO., London.
Free Will and Destiny. By St. George Lane Fox Pitt. With an Open Letter on the International Moral Education Congress and the League of Nations, by Rt. Hon. Sir Frederick Pollock, Bart., P.C., and an Appendix by Frederick J. Gould, Hon. Secretary, International Moral Education Congress. Pp. 100. 5*s.*

FROWDE, H., AND HODDER AND STOUGHTON, London.
Clinical Ophthalmology for the General Practitioner. By A. Maitland Ramsay, M.D. With Foreword by Sir James Mackenzie, M.D. Pp. 500. 42*s.*

GRIFFIN, CHARLES, AND CO., London.
Medico-Tropical Practice. By G. E. Brooke, L.R.C.P. Edin., D.P.H. 2nd ed. Pp. 522. 18*s.*

HOEBER, PAUL B., New York.
Epidemic Encephalitis (Encephalitis Lethargica). By Prof. F. Tilney, M.D., and H. S. Howe, M.D. Pp. 270. $3.50.

MACMILLAN AND CO., London.
The Bradshaw Lecture on the Surgery of the Heart (Dec. 11th, 1919). By Sir C. A. Ballance, K.C.M.G., C.B., M.V.O. Pp. 154. 10*s.* 6*d.*

MASSON ET CIE, Paris.
Chirurgie Réparatrice et Orthopédique Appareillages et Invalidités. Ouvrage publié sous la direction de MM. Jeanbrau, Nové-Josserand et Ombrédanne, professeurs agrégés aux Facultés de Montpellier, de Lyon et de Paris, Secrétaire de la Rédaction. P. Desfosses, chirurgien de l'hôpital britannique à Paris. 2 vols. Pp. 1340. 80 francs.

PUTNAM'S, G. P., SONS, LTD., London.
Radiant Motherhood: A Book for those who are Creating the Future. By Marie Stopes, D.Sc., Ph.D. Pp. 246. 6*s.*

SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE, London.
Florence Nightingale. By Eleanor F. Hall. Pp. 84. 3*s.* 6*d.*
Elsie Inglis. By Eva S. McLaren. With Preface by Lena Ashwell. Pp. 80. 3*s.* 6*d.*

THE ANGLO-EASTERN PUBLISHING CO., LTD., London.
Wedded Love or Married Misery? A Book of Health and Necessary Knowledge for the Married and those about to Marry. By W. N. Willis. Pp. 182. 6*s.* 6*d.*

THE MACMILLAN CO., New York.
The Treatment of Syphilis. By H. S. Baketel, A.M., M.D. Pp. 167.

THE ROCKEFELLER INSTITUTE, New York.
Studies from the Rockefeller Institute for Medical Research. Reprints Vol. XXXII. Pp. 610.

THIEME, G., Leipzig.
Diagnostischer Leitfaden für Sekret und Blutuntersuchungen. By Dr. C. S. Engel. Pp. 303. 12*s.*

UNIVERSITY PRESS, Liverpool.
Liverpool School of Tropical Medicine. Historical Record 1898–1920.

UNIVERSITY OF LONDON PRESS.
Animal Experiments and Surgery (Hunterian Lectures, 1920). By W. G. Spencer, M.S., F.R.C.S. Pp. 180. 6*s.*

WRIGHT, J., AND SONS, Bristol.
A Synopsis of Medicine. By H. L. Tidy, M.D. Pp. 952. 26*s.*

# Appointments.

***Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.***

BURROUGHS, A. E., M.D. Edin., has been appointed Specialist Medical Referee for Ophthalmic Cases under the Workmen's Compensation Act, 1906, for County Court Circuit No. 6.

St. Thomas's Hospital: HUMPHREYS, R. M., M.B., B.Ch. Oxon., WHITCOMBE, R. C. P., M.R.C.S., L.R.C.P. Lond., KENDALL, G. M., M.B. Cantab., GARNETT, D. G., M.R.C.S., L.R.C.P. Lond., WONG, M., M.R.C.S., L.R.C.P. Lond., D.T.M., MAXWELL, L. B., M.R.C.S., L.R.C.P. Lond., LOW, W. A., M.R.C.S., L.R.C.P. Lond., Casualty Officers and Resident Anæsthetists; HOBBS, F. B., M.R.C.S., L.R.C.P. Lond., BLAMPIED, H. J., M.R.C.S., L.R.C.P. Lond., ORME, E. S., M.R.C.S., L.R.C.P. Lond., BRETT, P. C., M.R.C.S., L.R.C.P. Lond., Resident House Physicians; WARE, S. A. T., M.R.C.S., L.R.C.P. Lond., Resident House Physician for Children; CHURCHER, D. G., M.B., B.S. Lond., SMART, A. H. J., M.B., B.Ch. Cantab., NEILSON, D. F. A., M.R.C.S., L.R.C.P. Lond., BROCKMAN, E. P., M.B., B.Ch. Cantab., Resident House Surgeons; MARRINER, H. I., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon for Ear, Nose, and Throat; ROBINSON, R. H. O. B., M.B., B.Ch. Cantab., House Surgeon; COOKE, R. C., M.R.C.S., L.R.C.P. Lond., Senior Obstetric House Physician; HALE, J., B.Ch. Cantab., Junior Obstetric House Physician; CARDELL, J. D. M., M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon; ROBERTS, E. D. T., M.R.C.S., L.R.C.P. Lond., Junior Ophthalmic House Surgeon; CAVENAGH, J. B., M.B., B.Ch. Oxon., BYRNE, C. H. C., M.B., B.S. Lond., HOLMES, H. W. H., M.R.C.S., L.R.C.P. Lond., Clinical Assistants (Throat); BACK, G. A., M.R.C.S., L.R.C.P. Lond., Clinical Assistant (Skin); HOLMES, H. W. H., M.R.C.S., L.R.C.P. Lond., Clinical Assistant (Ear).

Certifying Surgeons under the Factory and Workshop Acts: JARDINE, W. C., M.B., Ch.B. Edin. (Wombwell); HEMMING, C. P., M.R.C.S. (Bishop's Waltham); KINNEAR, F., M.B., Ch.B. Aberd. (Shefford); DARBY, W. S., M.B., B.C. Camb. (Harrow); COURT, C. C. C., M.B., Ch.B. Birm. (Okehampton).

# Vacancies.

***For further information refer to the advertisement columns.***

*Barnsley, Beckett Hospital and Dispensary.*—Sen. H.S. £250.
*Battersea General Hospital (incorporated), Battersea Park, S.W.*—Third Res. M.O. £200.
*Belfast County Borough.*—Bacteriologist and Pathologist. £700.
*Bengal, University of Dacca.*—Chair of Physical Education. Rs. 9000 to Rs. 12,000.
*Bethnal Green Infirmary, Cambridge-road, Bethnal Green, E.*—Asst. Med. Supt. £400.
*Birmingham Children's Hospital.*—Jun. Vis. Anæsth. £50. Res. M.O. £150.
*Birmingham General Hospital.*—Res. H.S. £100. Res. M.O. £155. Res. Anæsth. £100.
*Birmingham, Queen's Hospital.*—Third P. to Out-patients. £50. Cas. S. £100. Dent. S. £50. Surg. Registrar. £100.
***Birmingham University.*—Demonstrator in Pathology. £350.**
*Blackburn and East Lancashire Royal Infirmary.*—Jun. H.S. £250.
*Brighton, Royal Sussex County Hospital.*—Asst. H.S. £150.
*Bristol Eye Hospital.*—H.S. £150.
*Bristol General Hospital.*—Two H.P.'s, H.S., and Obstet. O. and H.S. £175 each.
*Cancer Hospital, Fulham-road.*—Asst. P. and Med. Reg. £250.
*Canterbury, Chartham Mental Hospital.*—Asst. M.O. £350.
*Cardiff, Talgarth, Breconshire, South Wales Sanatorium.*—Second Asst. Res. M.O. £400.
*Chester County Asylum.*—Second Asst. M.O. £425.
*Church Army Lads' Sanatorium, near Farnham, Surrey.*—Medical Superintendent.
*Colonial Service.*—M.O.'s for West African Medical Staff, Government Service in Malaya, East African Protectorates, West Indies (including British Guiana), Fiji, and the Western Pacific, &c.
*Deptford Metropolitan Borough.*—Second Asst. M.O.H. and Welfare Officer. £600.
*Devonport, Royal Albert Hospital.*—H.S. £200.
*Dorset County Council.*—Asst. County M.O.'s. £500.
*Edinburgh Royal Infirmary.*—Asst. Path., Asst. Clin. Path. £500 each. Also Second Asst. Clin. Path. £350.
*Egyptian Government, Ministry of Education.*—Prof. of Pharmacology. L.E. 1,200–1,440. Lecturer in Anat. L.E. 720.
*Essex Education Committee.*—Sch. Med. Inspec. £500.
*Gloucestershire Royal Infirmary and Eye Institution.*—H.P. £175.
*Great Yarmouth General Hospital.*—H.S. £250.
*Hove, Carr-Burton Memorial Hospital, Sackville-road.*—Res. M.O. £250.
*Huddersfield Royal Infirmary.*—Asst. H.S. £150.
*Hull Royal Infirmary.*—H.S. £200. Asst. H.S. £150.
*Ingham Infirmary and South Shields and Westoe Dispensary.*—Jun. H.S. £175.
*Lancashire County Council, Rufford Sanatorium and Training Centre.*—Med. Supt. £800.
*Leeds University, School of Medicine.*—Lect. in Exper. Phys. £500.
*Leicester City Isolation Hospital and Sanatorium, Groby-road.*—Two Res. M.O.'s. £500 and £350 respectively.
*Leicestershire and Rutland Mental Hospital, Narborough, near Leicester:*—Jun. Asst. M.O. £350.
*Liverpool, Royal Liverpool Children's Hospital.*—Two Res. H.P.'s and Two Res. H.S.'s. £90 each.
*Liverpool, Royal Southern Hospital.*—Two H.P.'s and Three H.S.'s. £100.
*Liverpool School of Tropical Medicine.*—Three Medical Men for Clinical and Research Work in Tropical Medicine.
*London County Council Mental Hospital Service.*—Asst. M.O.'s.
*London Lock Hospital, Soho, W.*—H.S. £200.
*London Temperance Hospital, Hampstead-road, N.W.*—Hon. Radiographer. Cas. O. £200. H.P. £120.
*M.A.B. Tuberculosis Service.*—Asst. M.O.'s at Margate, £515; at Brentwood, £579.
*Maidstone, Kent County Mental Hospital.*—Jun. Asst. M.O. £300.
*Manchester, Ancoats Hospital.*—H.S. £150.
*Manchester Royal Eye Hospital.*—Jun. H.S. £120.
*Manchester, St. Mary's Hospitals for Women and Children.*—H.S. for Whitworth Park Hospital. £100.
*Margate, Royal Sea Bathing Hospital.*—Res. S. £200.
*Metropolitan Borough of Wandsworth.*—Asst. Tuberc. O. £818.
*Middleton-in-Wharfedale Sanatorium, near Ilkley.*—Asst. M.O. £500.
*Newcastle-upon-Tyne Hospital for Sick Children.*—Hon. Asst. P.
*Newcastle-upon-Tyne, University of Durham College of Medicine.*—Lecturer on Medical Jurisprudence. Sen. and Jun. Demonstrators of Anatomy. £450 and £350 respectively.
*Nottingham General Hospital.*—H.S. and H.P. £200 each.
*Orkney, Parish of Rousay and Egilshay.*—Res. M.O. £300.
*Reading, Royal Berkshire Hospital.*—Second H.S. £200.
*Scarborough Education Committee.*—Sch. Dent. S. £250.
*Sheffield Royal Infirmary.*—H.P. £150.
*Southport County Borough.*—Asst. M.O.H. and Asst. Sch. M.O. £500.
*Southport General Infirmary.*—Sen. H.S. £250.
*Stafford, Staffordshire General Infirmary.*—H.S. £250.
*University of London.*—Prof. of Med. and Director of Med. Clin. £2000.
*Whalley, near Blackburn, "Calderstones," Certified Institution for the Reception of Mental Defectives.*—Sen. Asst. M.O. £665.

**The Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Gatehouse.**

# Births, Marriages, and Deaths.

## BIRTHS.

CARR.—On July 18th, at Makwar, Blue Nile, Sudan, the wife of B. G. D'Rastricke Carr, M.C., Medical Inspector, of a daughter.
DICKSON.—On August 14th, at Grindley House, Newcastle, Staffordshire, the wife of Robert H. Dickson, F.R.C.S.—a daughter.
OSBORN.—On August 14th, at Sheet-street, Windsor, the wife of Dr. A. G. Osborn, of a daughter.
PRENTISS.—On August 9th, the wife of Dr. H. H. Prentiss, of Cowbeech, Sandhurst, Kent, of a daughter.
WOOLLEY.—On August 13th, at Brunswick-place, Hove, the wife of Lieut.-Col. J. M. Woolley, I.M.S., of a son.

## DEATHS.

CHRISTIE.—On July 22nd, on s.s. *Moghilev*, William Ledingham Christie, M.D., F.R.C.S.
HENSLEY.—On August 8th, at The Ark, Farnham, Philip John Hensley, M.A., F.R.C.P., M.D., in his 82nd year.
JONES.—On August 13th, at Lewisham-road, James Jones, M.D., aged 77 years.
MEARS.—On August 10th, at 13, Windsor-gardens, North Shields, Frederick Charles Mears, M.B., M.R.C.S., L.S.A.

*N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Short Comments, and Answers to Correspondents.

## A NATIVE MEDICAL SCHOOL IN UGANDA.

BY E. N. COOK, M.B., B.SC. LOND.

A NOVEL and interesting experiment in training natives in medical and surgical work is being made in Uganda. The romance of the undertaking lies in this. Native boys who are the raw material from the best schools of the country are being taken, and are receiving a three years' course of training at the large C.M.S. Hospital at Mengo, the native capital of Uganda, where the medical school began its work three years ago. Twelve lads, of the highest standard of education as yet attained in Uganda, were selected by the Native Government and sent to the hospital to be trained. They are extraordinarily keen and readily absorb any knowledge imparted to them. They live in a hostel attached to the hospital and attend lectures on anatomy, physiology, medicine, surgery, elementary chemistry, pharmacy, and English. In the operating theatre they give anæsthetics and assist in the sponging, &c., at operations; in the wards they act as clerks and dressers to the doctors; in the pathological laboratory they examine blood-films and various kinds of specimens. In the dispensary, with its crowd of native and Indian patients, they themselves examine the cases under the direction of the doctors.

It is curious to watch the black man writing a prescription or making up accurately the mixture that has been ordered. The teachers responsible for the training are the doctors and sisters in the hospital, who, over-worked as they are, make time for this voluntary work for the good of the country. Thus the need has arisen for a young and enthusiastic doctor to devote his time to the work. I have taken a part in the working of this school, and can speak from experience of the fascination of breaking new ground—taking intelligent natives and building a medical education upon their school training.

The study of tropical diseases in Central Africa, with all its opportunities of investigating methods of treatment in connexion with a well-organised hospital, is of never-failing interest. Blackwater fever, malaria, tick fever, sleeping sickness, and the like can be studied there better perhaps than in any other country. Research work is needed in many un-pigeonholed diseases, and a well-established medical training centre at the capital will, it is believed, be of value to the whole country in sending out natives trained up to the standard of clinical assistants who will be able to run native dispensaries throughout the country.

The British Government have this year guaranteed the stipend of a doctor to go out under the C.M.S. as superintendent of the medical training in Uganda. It is a unique opportunity for a man keen on teaching, and offers unlimited opportunities of investigating new or partly-known tropical diseases. There is at the present time an urgent need felt for supplying native dispensaries with natives trained in the country, and along with this an anti-venereal campaign is being planned by the Government. Treatment of venereal diseases is taken as a special part of the curriculum, and the students have great facilities in the practical treatment of venereal diseases in the special wards devoted to them. The present lot of students completed their three-years' course last January, and entered for a final examination for a Government certificate. Four students obtained the certificate, and this marks but the first stage in the progress of medical training in Uganda. There is a vast difference between the native medicine-man with his beads and incantations and these lithe and athletic young Baganda Christians, trained under up-to-date medical methods.

The difficulty of this work in Uganda, as compared with India or China, where the medical training of natives has been going on for years, is that there they have an already educated manhood upon which to graft the medical knowledge, whereas in Uganda general education is as yet in its earliest stages. It is, moreover, a country with no literature as yet, and eventually it is hoped the training will be given in English, but meantime medical handbooks in the vernacular are urgently required. At the present moment the school is closed owing to depletion of staff and the fact that I am on leave in England.

Geographically, the strategic importance of Uganda is fully recognised, and now that German East Africa has been re-labelled Tanganika Territory there is an "all-red" strip of British territory from Cairo to the Cape. Uganda lies half-way along this journey and is also the terminus of the railway through East Africa from Mombasa. Uganda is rapidly becoming the hub of the African universe, and from it will radiate knowledge, progress, and relief of suffering to the surrounding millions who are placed under British protection.

A laboratory class of native students in Uganda.

## A HANDY INCOME-TAX GUIDE.

A STIFF paper folder of 10 pages entitled "Income-tax and Super-tax: a Tabular View, 1842–1921," explains the 1920 Budget changes, and shows in a concise and handy form the present position of income-tax and super-tax, along with the several rates, exemptions, deductions, allowances, and so forth, now in force. The publication can be obtained from Messrs. Oliver and Boyd, 33, Paternoster-row, London, E.C., at 1*s.* (post-free, 1*s.* 2*d.*), and is well worth the money to any income-tax payer.

## THE LONDON ASSURANCE, 1720–1920.

AN assurance company is naturally proud of a history of 200 years, and the souvenir of the bicentenary of the London Assurance which lies before us, written in Mr. G. S. Street's graceful manner and printed for private circulation, gives an interesting picture of bygone days and also a remarkable record of how a well-managed business concern can fight disaster successfully, and from small beginnings grow into a vast and eminently prosperous undertaking. The London Assurance grew out of a scheme of Marine Insurance started in 1719 by Lord Chetwynd, unkindly known as "Chetwynd's Bubble," and another insurance scheme known as "Overall's." A Royal Charter for Marine Insurance was granted in 1720, and one for Fire and Life in 1721. Chetwynd was the first governor, and Overall was an official of the company. In 1731 he was secretary, and in 1755, about which date he died, it appears that there was a deficiency in the funds of £213 3*s.* 11*d.* The company had a hard time in its early youth, for some eight months after the granting of the Charter the South Sea Bubble burst. In the first year of its existence the value of the shares (£25) fluctuated between £160 and practically nothing, but nevertheless they weathered the storm.

Mr. Street has collected from the minute books of the company and from sundry newspaper cuttings preserved by

the secretary a collection of interesting facts and occurrences in the history of the institution. In March, 1806, we find the firemen and porters being supplied with clothing. The jacket of the former cost £4 10s., that of the latter £4 8s., "including waistcoats with sleeves and plush breeches." Such clothing inspired the W.S. of Rejected Addresses.

> "Starting from short and broken snooze
> Each sought his ponderous hob-nailed shoes,
> But first his worsted hosen plied,
> Plush breeches next in crimson died
> His nether bulk embraced.
> Then jacket thick of red or blue
> Whose massy shoulder gave to view
> The badge of each respective crew
> In tin or copper traced."

A picture of such badges is given opposite p. 36 of Mr. Street's book.

We have only space for two more incidents. On Feb. 29th, 1768, the office in Birchin-lane was held up, quite in to-day's fashion, by a madman, who hit the one clerk over the head with a pistol and decamped with nearly 250 guineas. In 1786 a lady, by name Elizabeth Wade, was tried for setting fire to her lodgings near Coldbath Fields. Much combustible material was found lying about, and the whole of her property was valued at £20. She had shortly before insured with the company for £1500. The chairman of the quarter sessions, however, proceeded, after dwelling on the enormity of her offence, to sentence her to a fine of 1s. and 12 months' imprisonment. Considering the draconic nature of the criminal code at that date—stealing from a shop to the value of 5s. was a capital offence—Elizabeth was extraordinarily lucky.

## EGYPTIAN WATER-SUPPLIES.

SINCE the early part of 1915 the Department of Public Health in Egypt has made special efforts to undertake the regular inspection of all public water-supplies, whether in the hands of the Government, of municipalities, companies, or private individuals. Although no special staff was then available for this purpose, the Director of the Public Health Laboratories was placed in charge, in collaboration with the Chief Engineer of the Municipalities and Local Commissions Section of the Ministry of the Interior. These officers visited and reported on the more important supplies, and regular bacteriological examinations were made of drinking water, aerated waters, and ice in Cairo. It is stated by Mr. C. Todd, Director of the Public Health Laboratories,[1] that although a great deal has been done for the provision of water-supplies for the larger towns, much remains to be done even in Cairo and Alexandria; and that most of the smaller towns are still taking their water generally from very questionable sources. Since the beginning of 1915 regular and systematic examination has been made of the Nile water at Cairo by collecting weekly samples "from near the surface of the river in mid-stream at a point opposite the north end of Roda Island, a bottle being let down to arm's length in the river." During the period of low Nile, from January to June inclusive, the suspended solids are low (below 100 parts per million). During June or July the river begins to rise, and from July to September continues to do so, the water being charged with suspended matter amounting to 1235 parts per million (August, 1915) and even 1547 per million in August, 1917. Questions arose as to the plumbo-solvency of Nile water and the use of bleaching powder for purification purposes; its addition up to an amount corresponding to 5 parts of active chlorine per million does not increase the plumbo-solvency in the case of the Nile water, which is not unduly high and lower than that of some European city supplies. From experiments on bleaching powder dried "by passing a current of dry $CO_2$-free air over the powder contained in a U-tube, and immersed in an oil bath, the temperature of which was slowly raised to a maximum of just under 100° C.," it was found that this mode of drying removes practically every trace of water, leaving a powder which, *when kept dry*, undergoes practically no decomposition when maintained at as high a temperature as 45° C. for a very long period. The Jewell system of mechanical filtration is in use at Beni Suef, and is giving satisfactory results. There are two "decantation basins" (which would be better called "settling tanks" because "decant" means "to pass off gently by inclining," or tilting up the vessel containing the fluid) where alum is added, and from which the water is run on to gravel and sand filters. Samples are examined by a transparency test, which consists in noting the visibility of a platinum wire through a column of the filtered water, 1·20 metres long. This system of filtration is also in use satisfactorily at Giza, Mansura, and elsewhere. At Port Said, Suez, and Ismailia the Puech-Chabal system of sedimentation and filtration also works well. The bacterial content is reduced from 610 per c.cm. in the raw water at Port Said to 13 per c.cm. after decantation and filtration. During the war the laboratories were constantly referred to by the military authorities in regard to water-supplies for the troops in Egypt and the Sinai Peninsula. Several hundreds of these analyses and descriptions of the sources of water are collected in the present report, and form an invaluable record for future reference.

[1] Report on Egyptian Water-Supplies, Cairo, Government Press, 1920.

# Medical Diary.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL MEDICAL COLLEGE.

MEDICAL UNIT, in the Clinical Theatre of the London Hospital, E.

MONDAY, August 23rd.—2 P.M., Mr. Goulden: Eye Conditions in Focal Brain Disease.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, August 23rd.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 5 P.M., Mr. MacDonald: Stricture.

TUESDAY.—10.30 A.M., Surgical Registrar: Demonstration of Cases. (Surgical Wards.) 4.30 P.M., Mr. Addison: Practical Surgery.

WEDNESDAY.—10.30 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 4.30 P.M., Dr. Owen: Demonstration of Medical Cases. (Lecture Room.)

THURSDAY.—12 noon, Mr. Sinclair: Abdominal Diagnosis. 4.30 P.M., Mr. B. Harman: Disorders of the Lacrymal Sac.

FRIDAY.—12.15 P.M., Dr. Burnford: Applied Pathology. 4.30 P.M., Mr. D. Buxton: Local Analgesia in Dental Cases.

SATURDAY.—12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen.

Daily:—10 A.M., Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

MALE LOCK HOSPITAL, Dean-street, W.

MONDAY, August 23rd, WEDNESDAY, AND FRIDAY.—5 P.M., Dr. C. Russ: Demonstration of the Treatment of Gonorrhœa by Electrolysis.

## Communications, Letters, &c., to the Editor have been received from—

A.—Dr. S. G. Askey, Lond.; Dr. A. Abrahams, Lond.

B.—Lt.-Col. Sir J. Barrett, Melbourne; Dr. F. A. Bainbridge, Middleton-in-Teesdale; Mr. P. W. Boughton-Leigh, Arundel; British and Russian Transport Co., Lond.; Messrs. Burroughs Wellcome and Co., Lond.; Dr. J. Blomfield, Lond.; Board of Education, Lond.; Dr. H. Barber, Derby.

C.—Crystal Palace, Lond., Gen. Manager of; Dr. H. Curtis, Lond.; Sir F. Colyer, Deal; Chartered Society of Massage and Medical Gymnastics, Lond.

D.—Dr. J. N. D'Esterre, Lond., Dollard Printinghouse Dublin, Ltd., Dublin.

E.—Messrs. Evans, Sons, Lescher, and Webb, Lond.

F.—Farnborough, Medical Officer of Health of.

G.—Great Northern Central Hospital, Lond.; Dr. R. P. Garrow, Lond.; Dr. E. F. Greene, Liverpool; Dr. G. Graham, Lond.; Lt.-Col. E. Goodall, Whitchurch; Dr. T. C. Graves, Birmingham; Mr. J. E. Gurdon, Lond.

H.—Dr. A. L. Hoops, Shanklin; Prof. A. J. Hall, Sheffield.

I.—Mr. S. T. Irwin, Belfast.

L.—Dr. C. E. Lakin, Lond.; Dr. A. W. Lemarchand, Barnstaple.

M.—Dr. J. B. McDougall, Wakefield; Dr. E. H. M. Milligan, Bangor; Ministry of Health, Lond.; Dr. W. F. Menzies, Cheddleton; Ministry of Agriculture and Fisheries, Lond.; Ministry of Labour, Lond., Sec. of; Dr. W. J. McKeand, Lond.; Mr. C. C. Morley, Milford Haven; Mr. J. E. R. McDonagh, Lond.; Medical Research Council, Lond.; Mr. R. B. Marston, Lond.; Dr. T. W. Mitchell, Hadlow; Dr. W. C. Morton, Leeds.

N.—Nottingham, Medical Officer of Health of.

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